

Figure 1

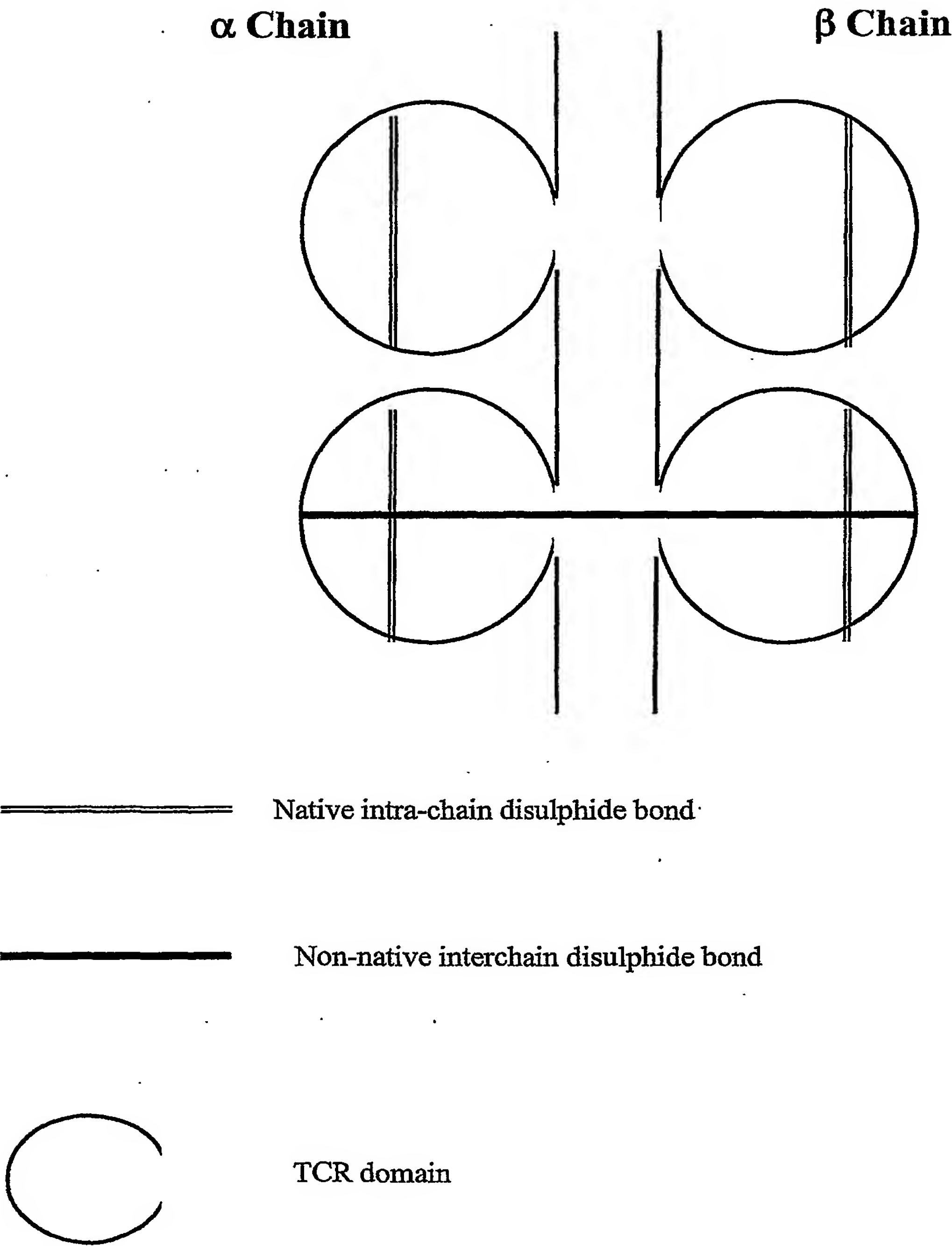


Figure 2a

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Figure 2b

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Figure 3a

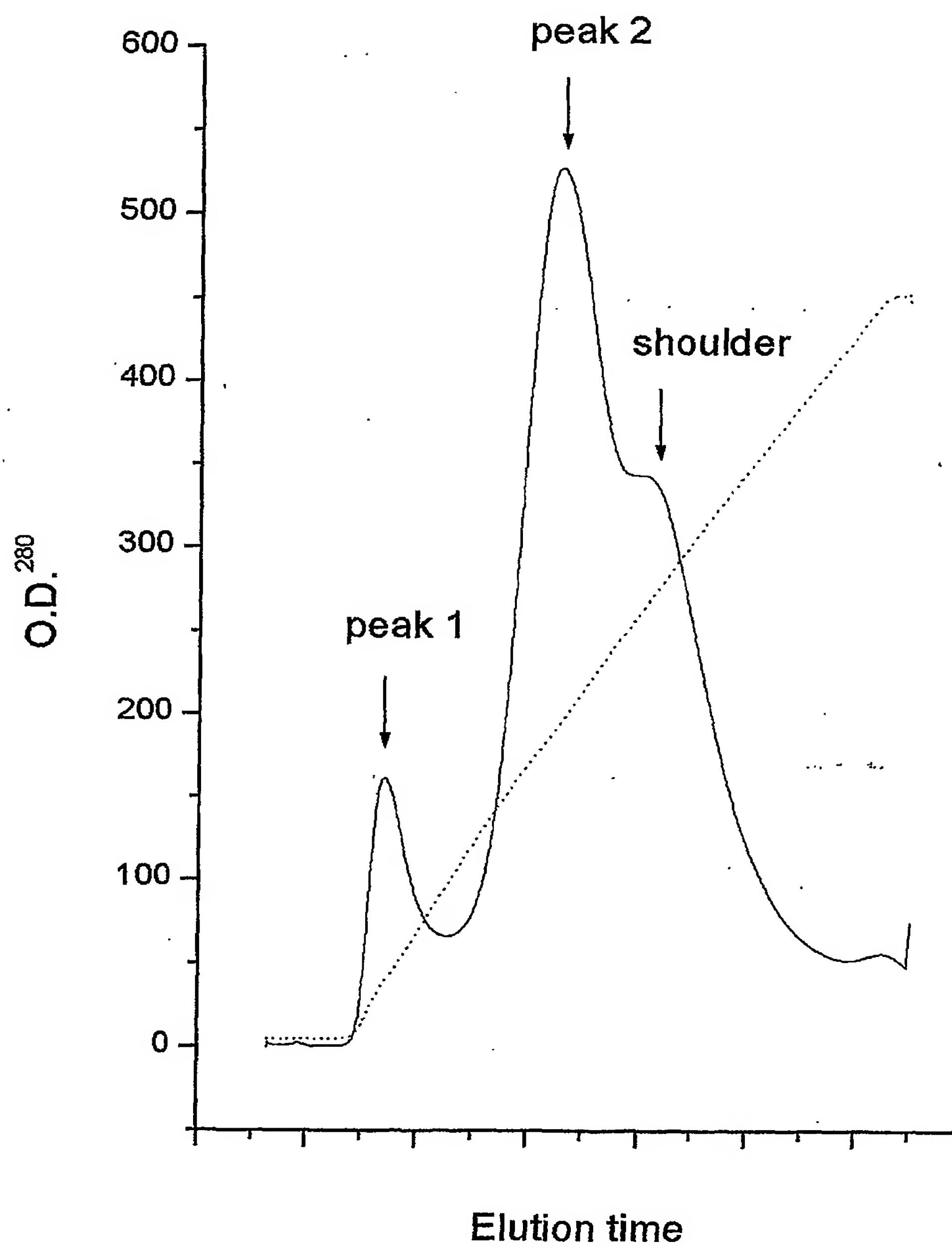
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PESS*

Figure 3b

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FYPDHVELSW WVNGKEVHSG VCTDPQPLKE QPALNDSRYA LSSRLRVSAT
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Figure 4



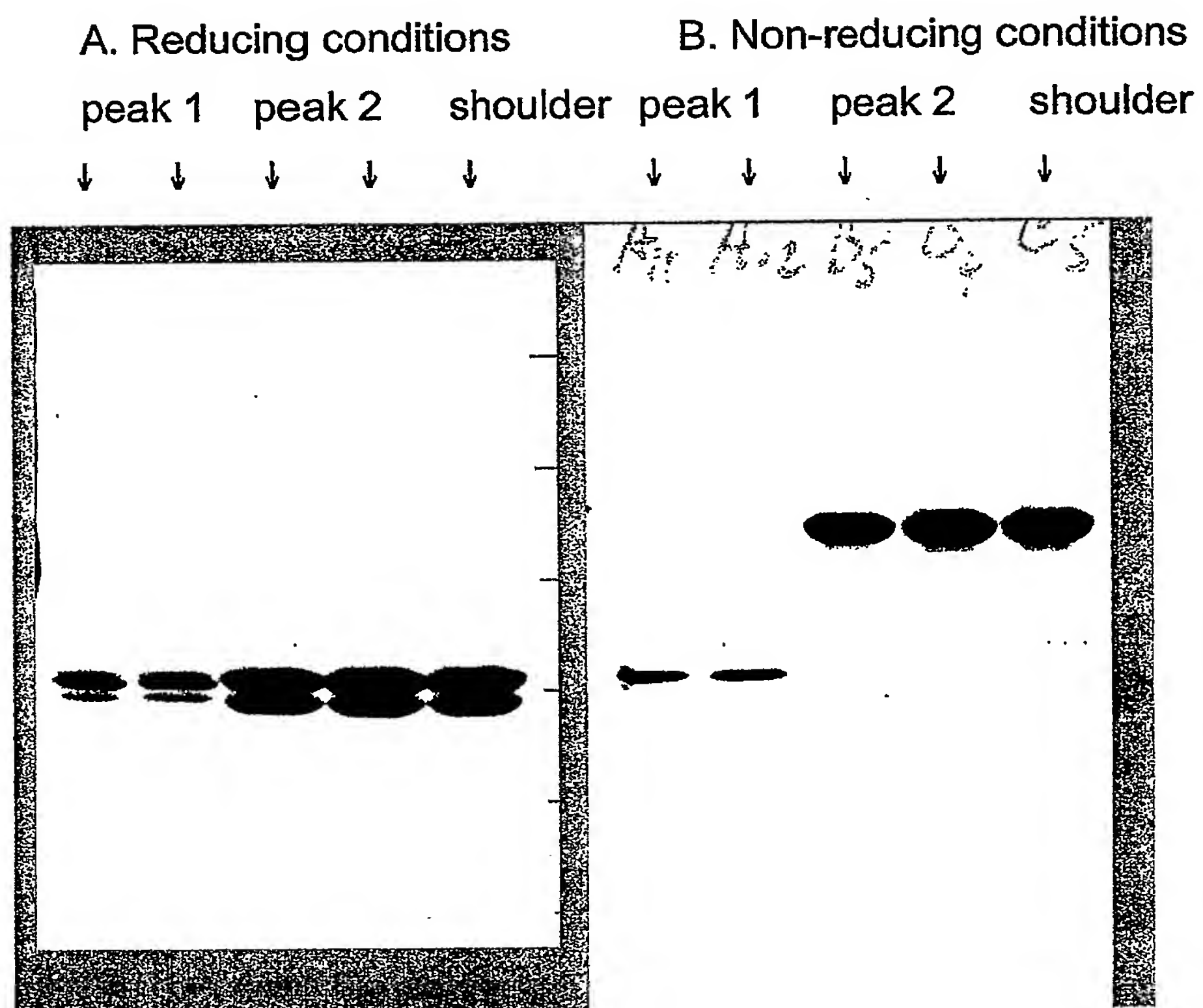
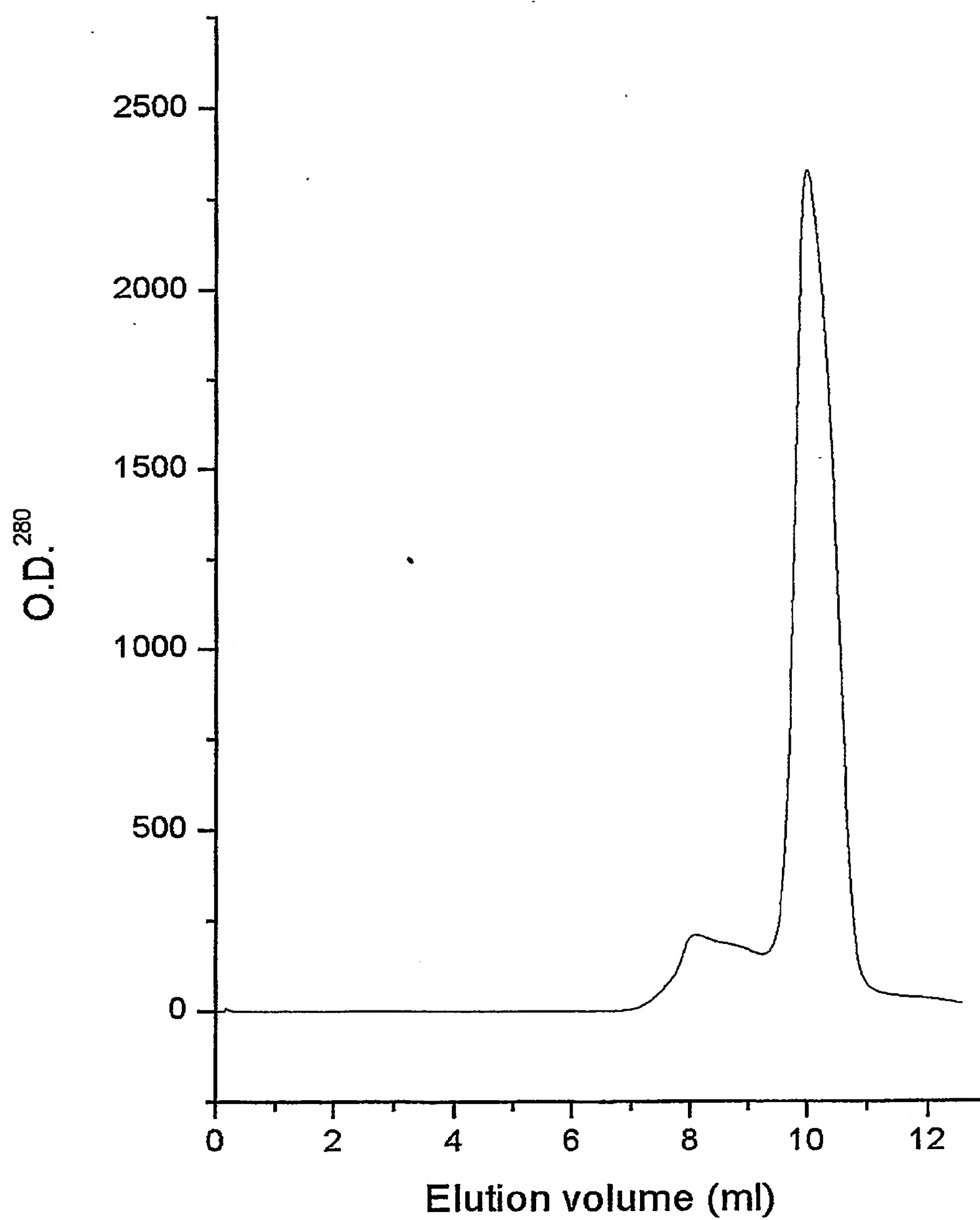


Figure 5

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Figure 6



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Figure 7

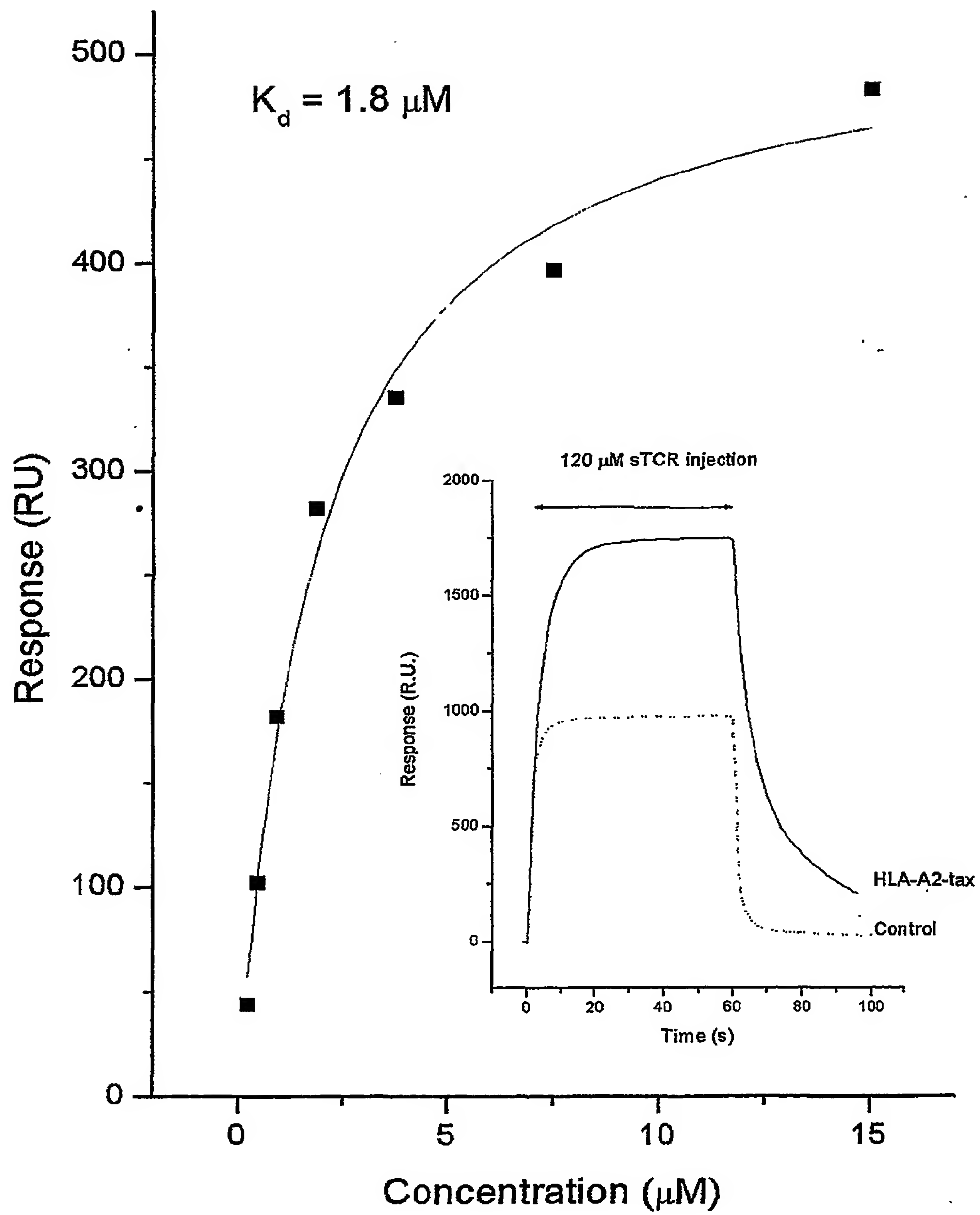


Figure 8a

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Figure 8b

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Figure 8c

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Figure 9a

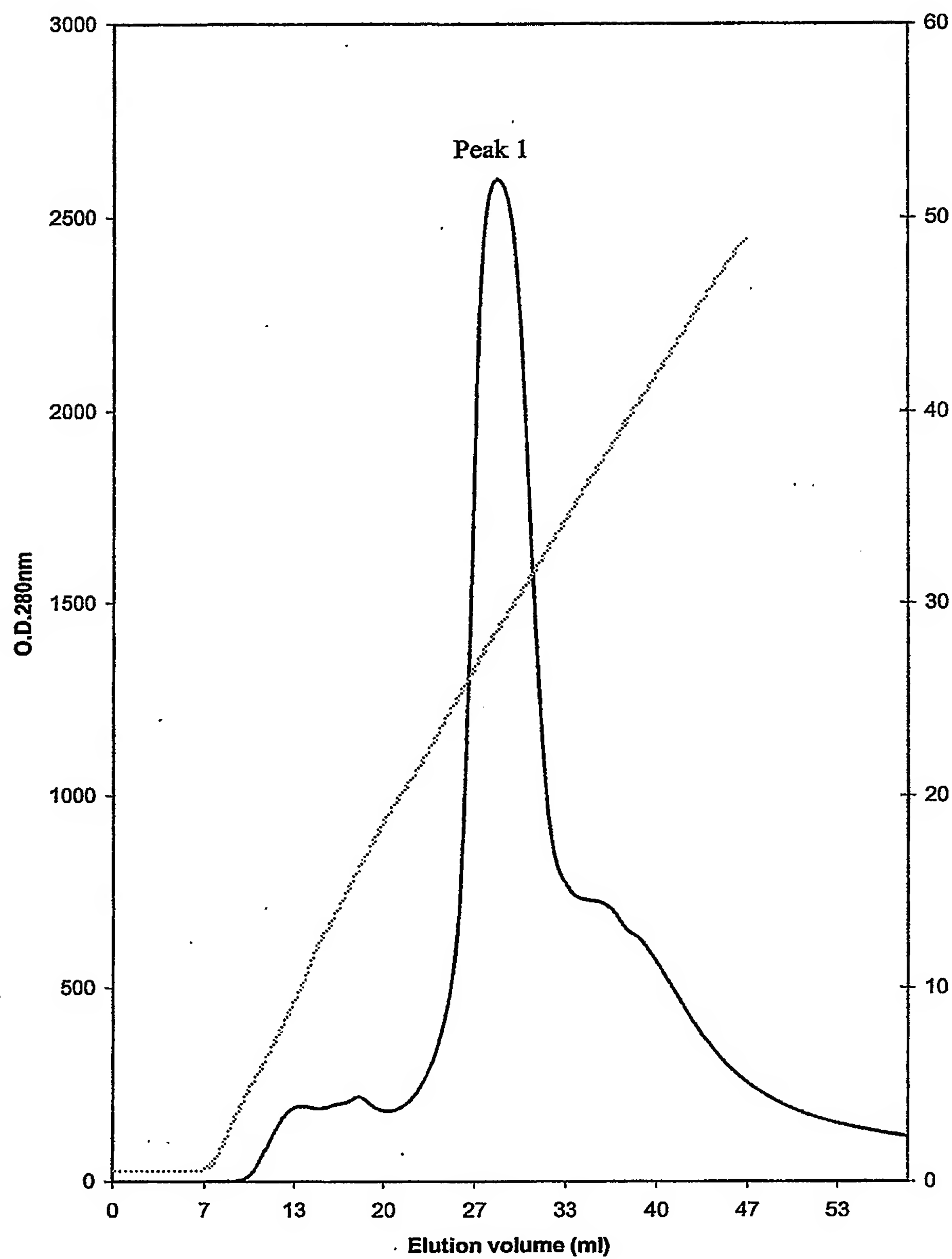
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DPAVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVY
ITDKCVLDMRSMDFKSNSAVAWSNKSDFACANAFNNSI
IPEDTFFPSPESS Stop

Figure 9b

MVDGGITQSPKYLFRKEGQNVTLSC EQNLNHDAMYWY
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VELSWWVNGKEVHSGVCTDPQPLKEQPALNDSRYSLSS
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PVTQIVSAEAWGRAD Stop

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Figure 10



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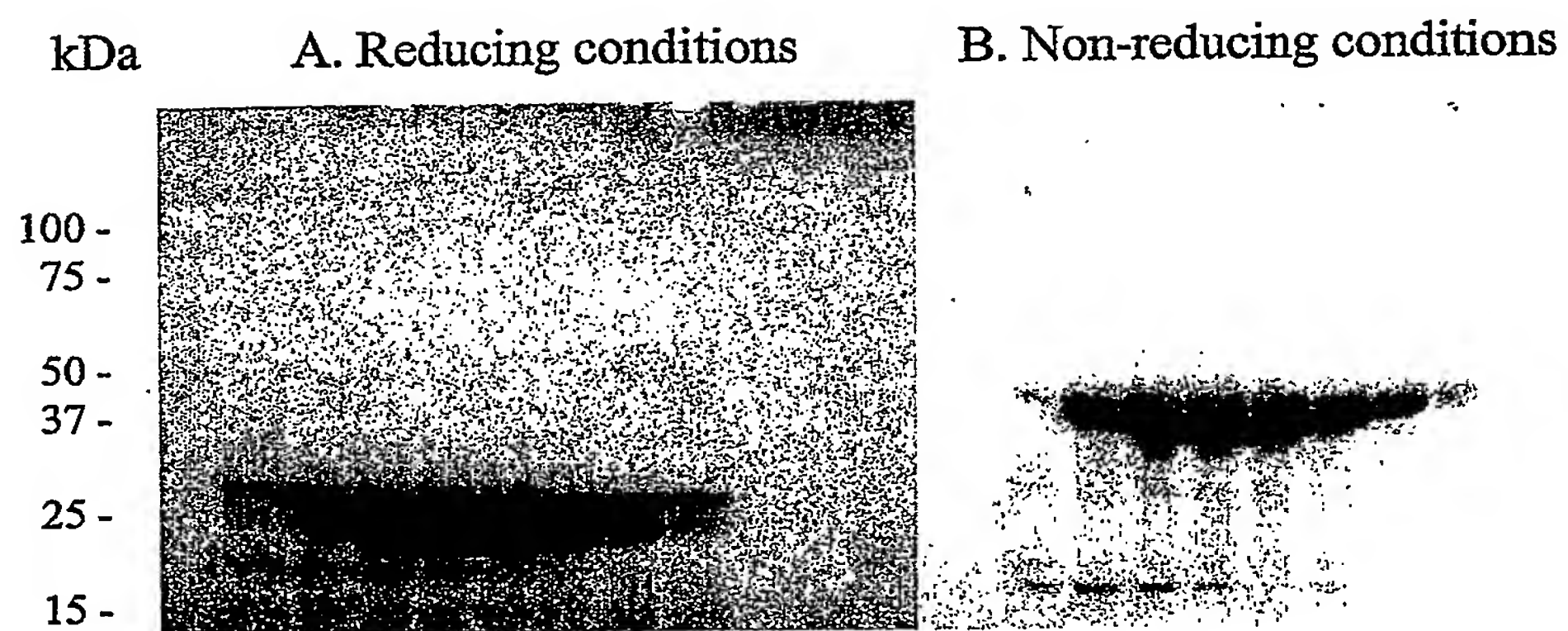
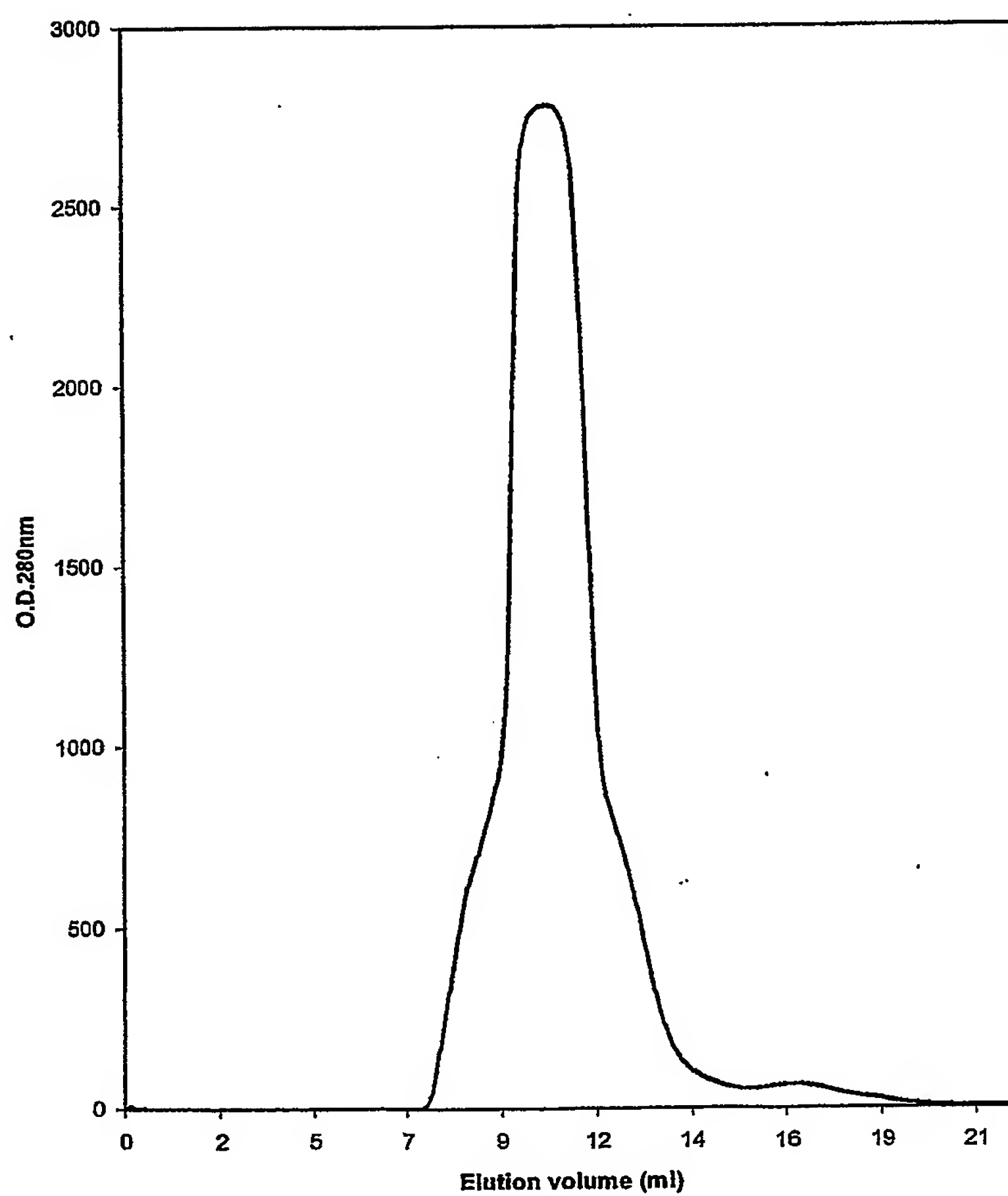
Figure 11**Figure 12**

Figure 13a

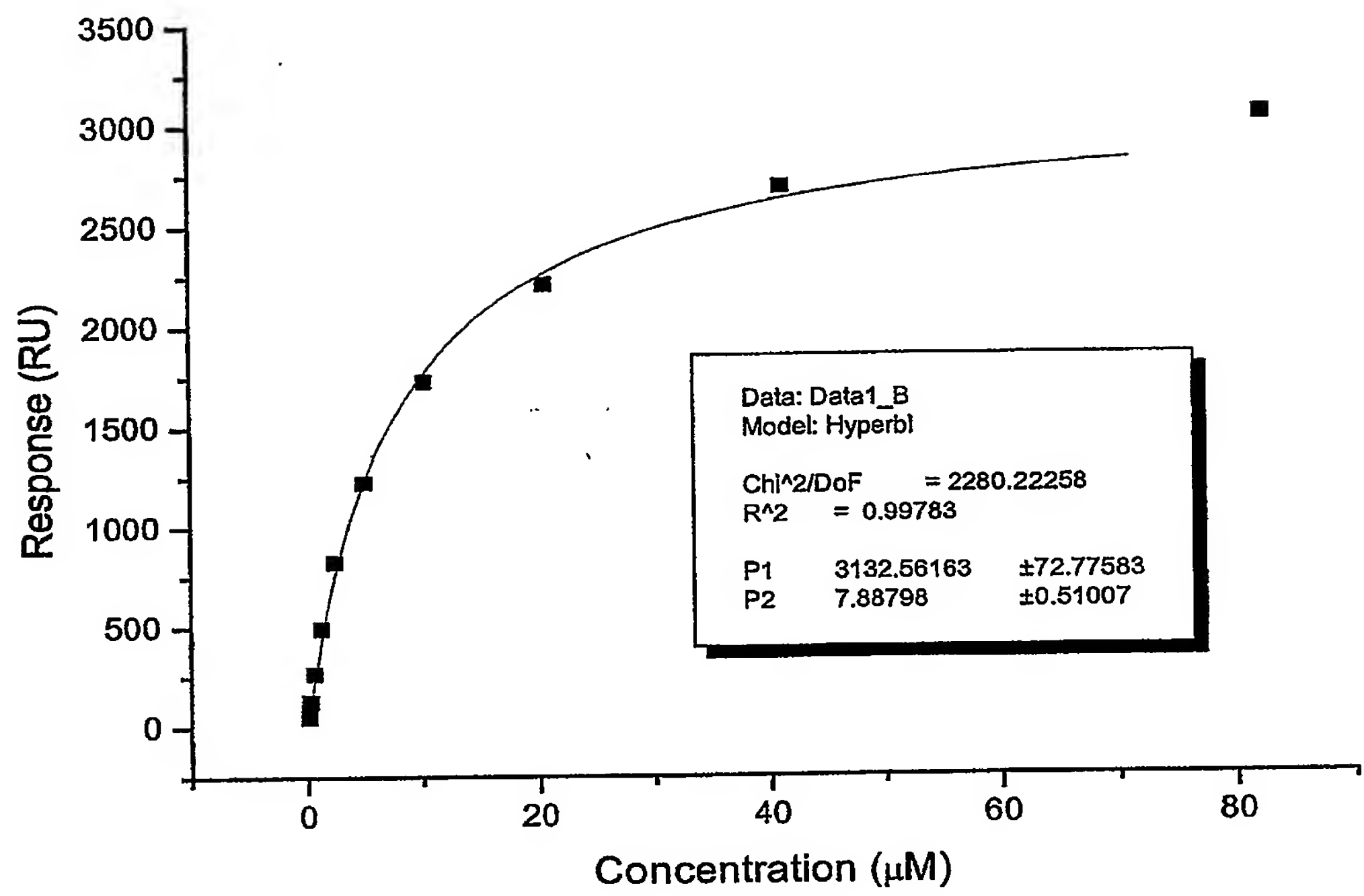


Figure 13b

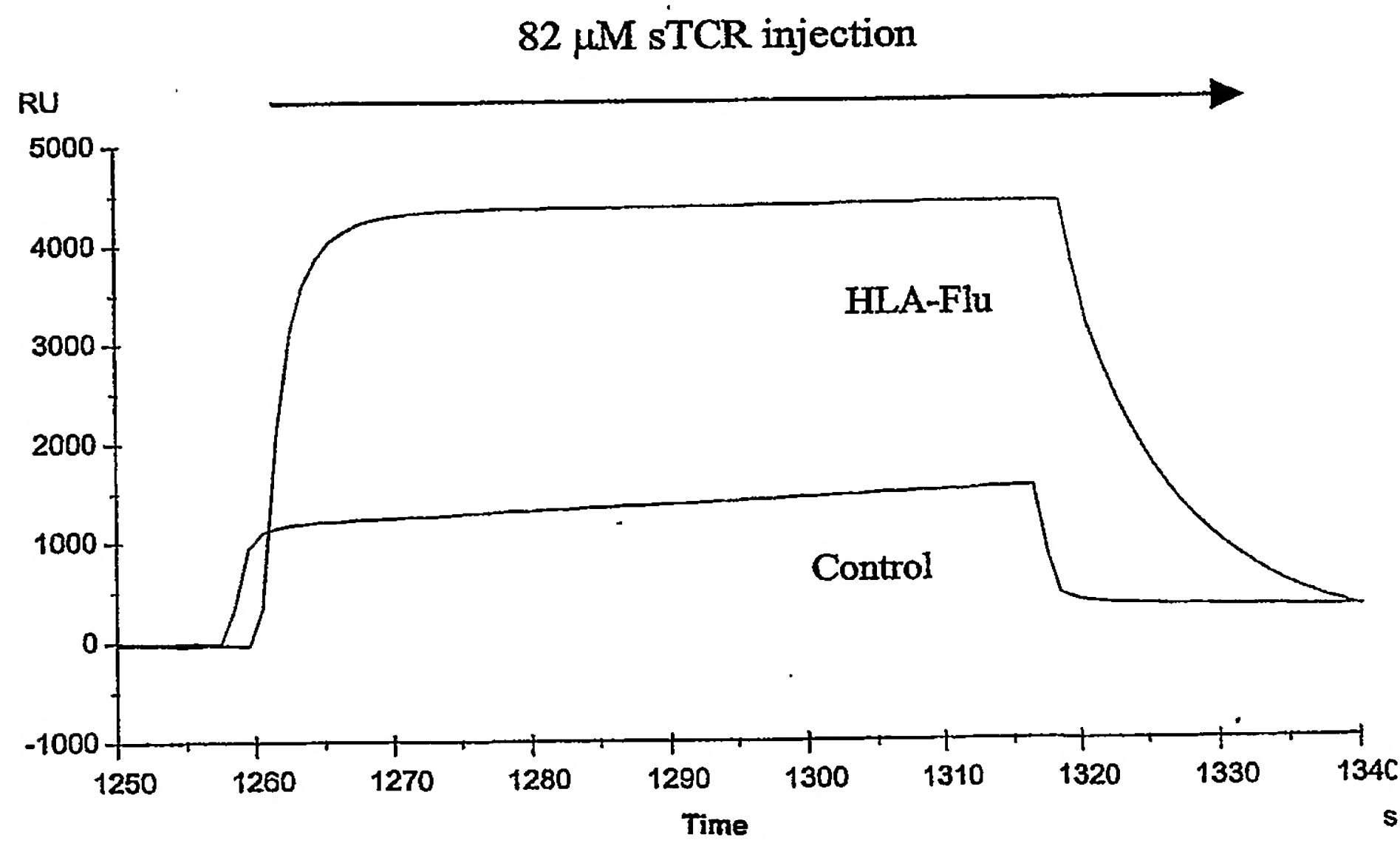


Figure 14a

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Figure 14b

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Figure 15a

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AASQPGDSATYLC AVRPTSGGSYIPTFGRGTS LIVHPYI
QNPDP AVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDS
DVYITDKCVLDMRSMDFKSNSA VAWSNKSD FACANAF
NNSIIPEDTFFPSPSS Stop

Figure 15b

MGVTQTPKFQVLKTGQSM TLQCAQDMNHEYMSWYRQ
DPGMetGLRLIHYSVGAGITDQGEVPNGYNVSRSTTEDF
PLRLLSAAPSQTSVYFCASSYVGNTGELFFGEGSRLTVL
EDLKNVFPPEVA VFEPSEAEISHTQKATLVCLATGFYPD
HVELSWWVNGKEVHSGVCTDPQPLKEQPALNDSRYAL
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KPVTQIVSAEAWGRAD Stop

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Figure 16

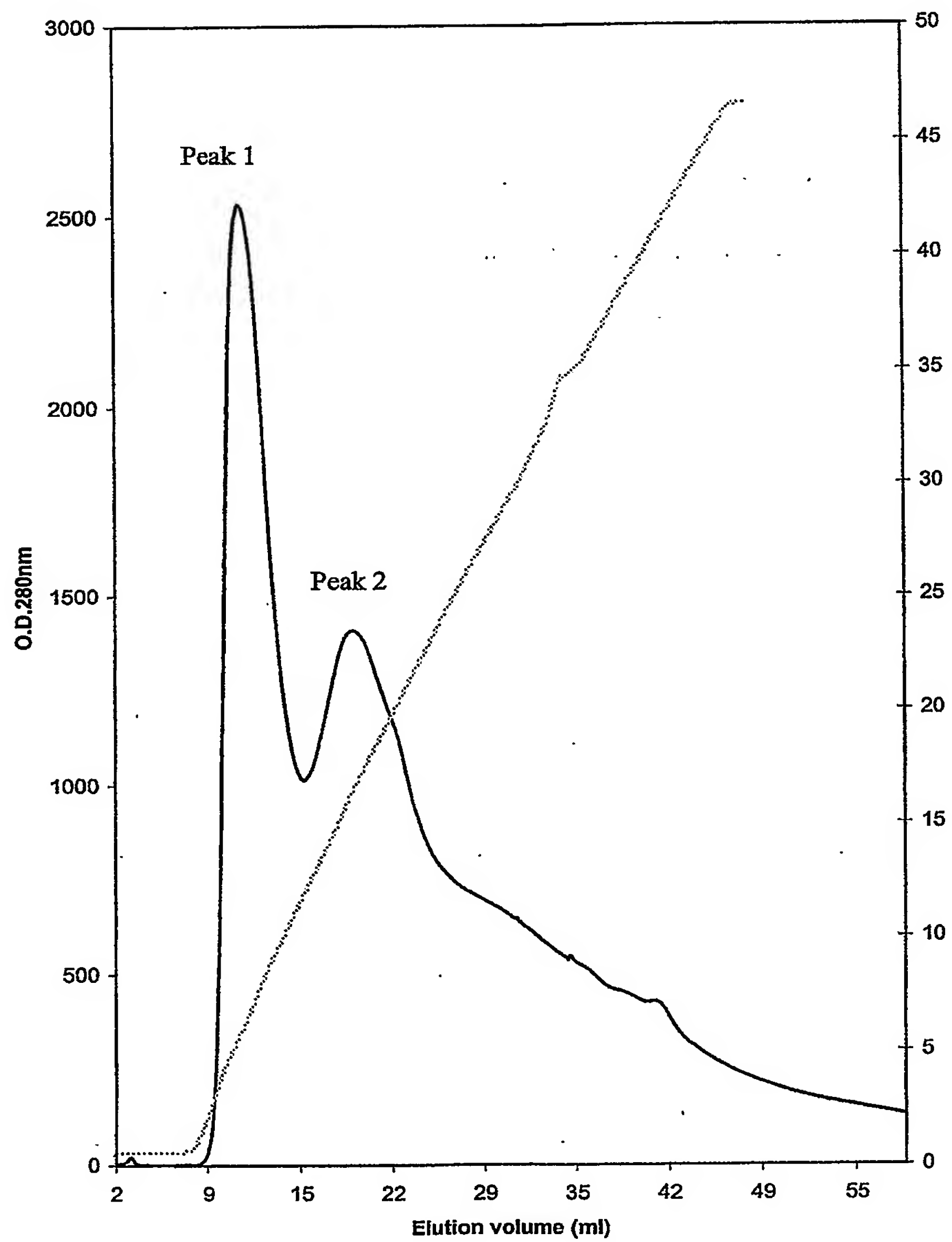


Figure 17

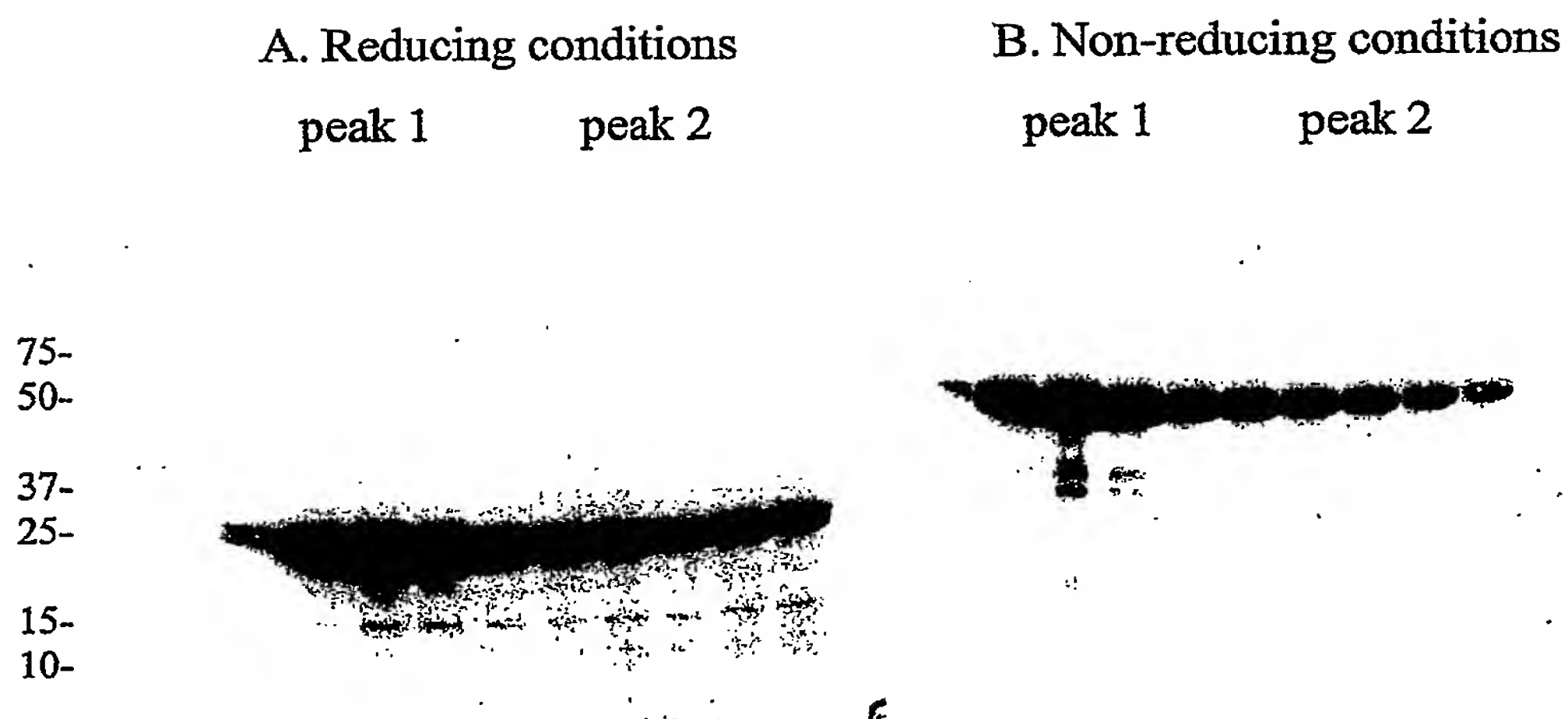
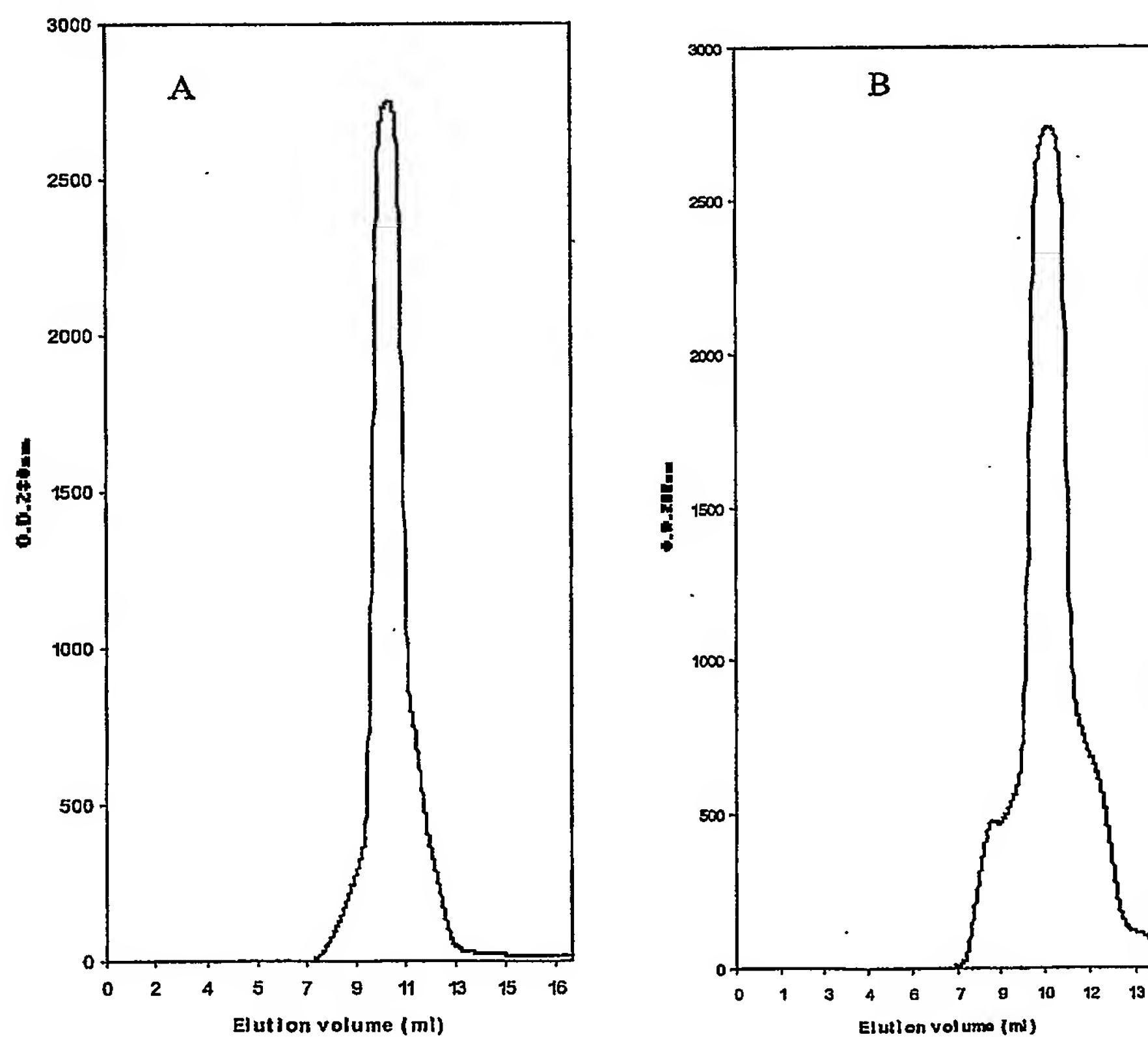


Figure 18



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Figure 19a

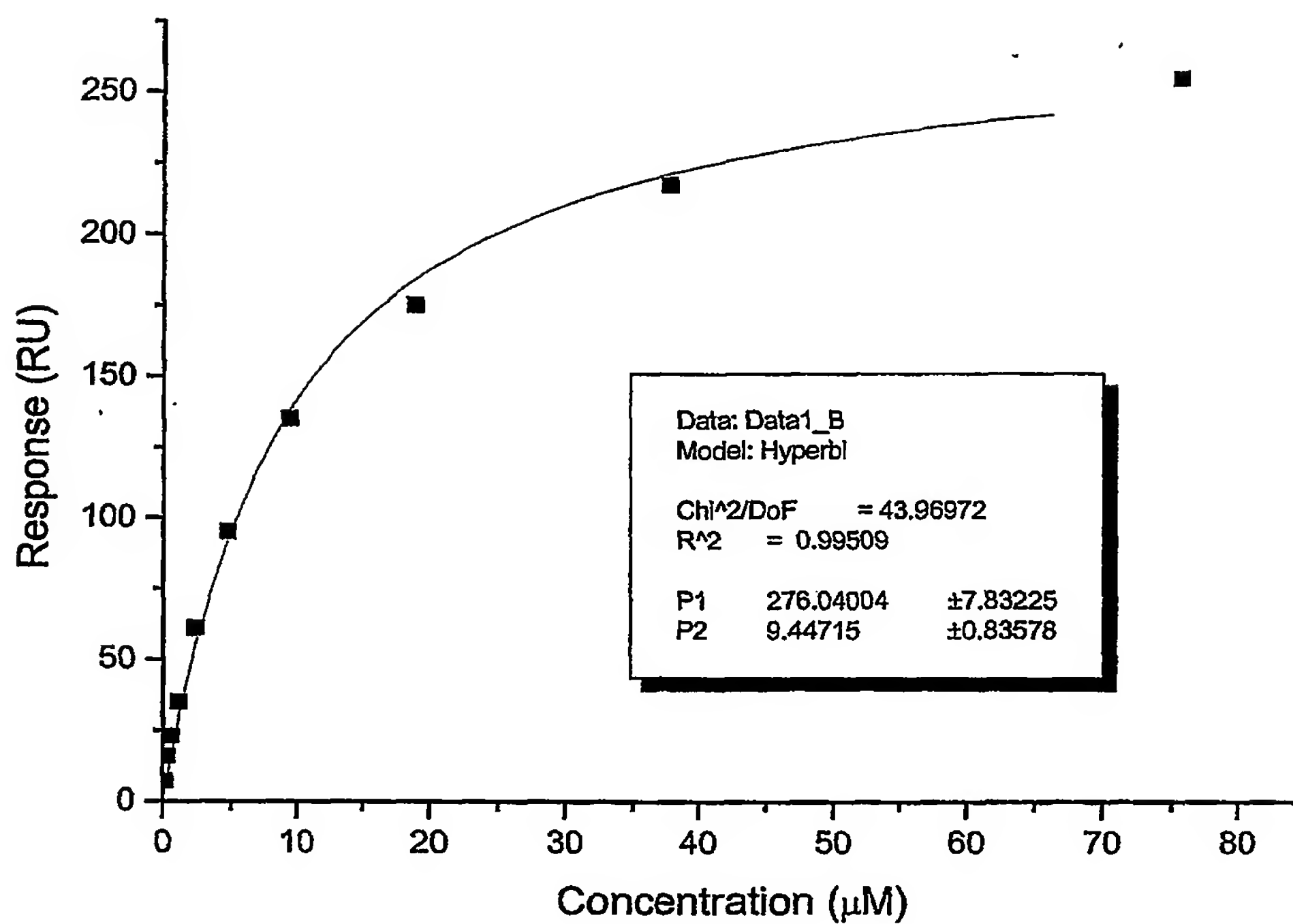


Figure 19b

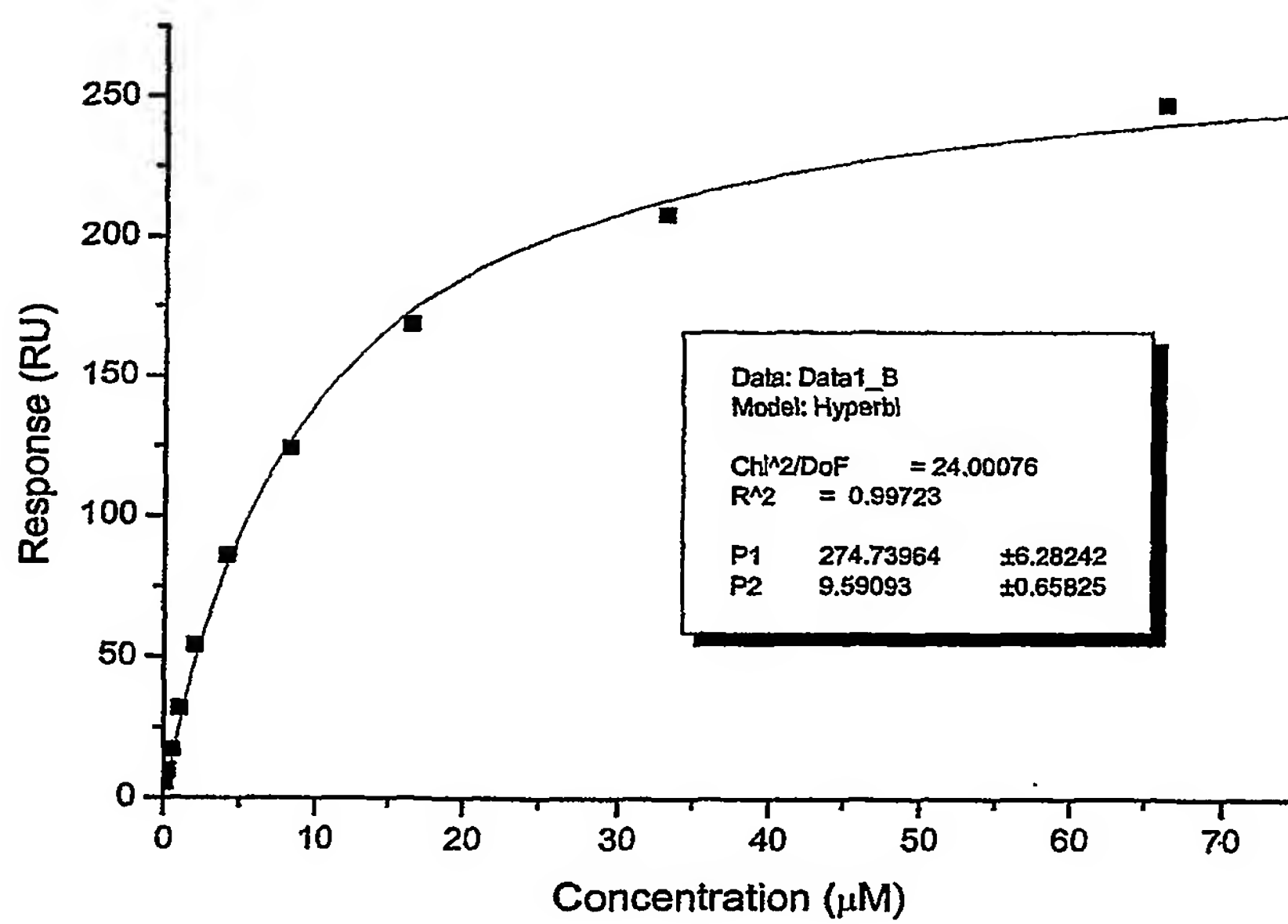


Figure 20a

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Figure 20b

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Figure 21a

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AASQPGDSATYLC AVRPTSGGSYIPTFGRGTSLIVHPYI
QNPDP AVYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDS
DVYITDKCVLDMRSMDFKSNSA VAWSNKSDFACANAF
NNSIIPEDTFFPSPESSC Stop

Figure 21b

MGVTQTPKFQVLKTGQSM TLQCAQDMNHEYMSWYRQ
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LRLLSAAPSQTSVYFCASSYVGNTGELFFGEGSRLTVLE
DLKNVFPPEVAVFEPSEAEISHTQKATLVCLATGFYPDH
VELSWWVNGKEVHSGVCTDPQPLKEQPALNDSRYALSS
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PVTQIVSAEAWGRADC Stop

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Figure 22

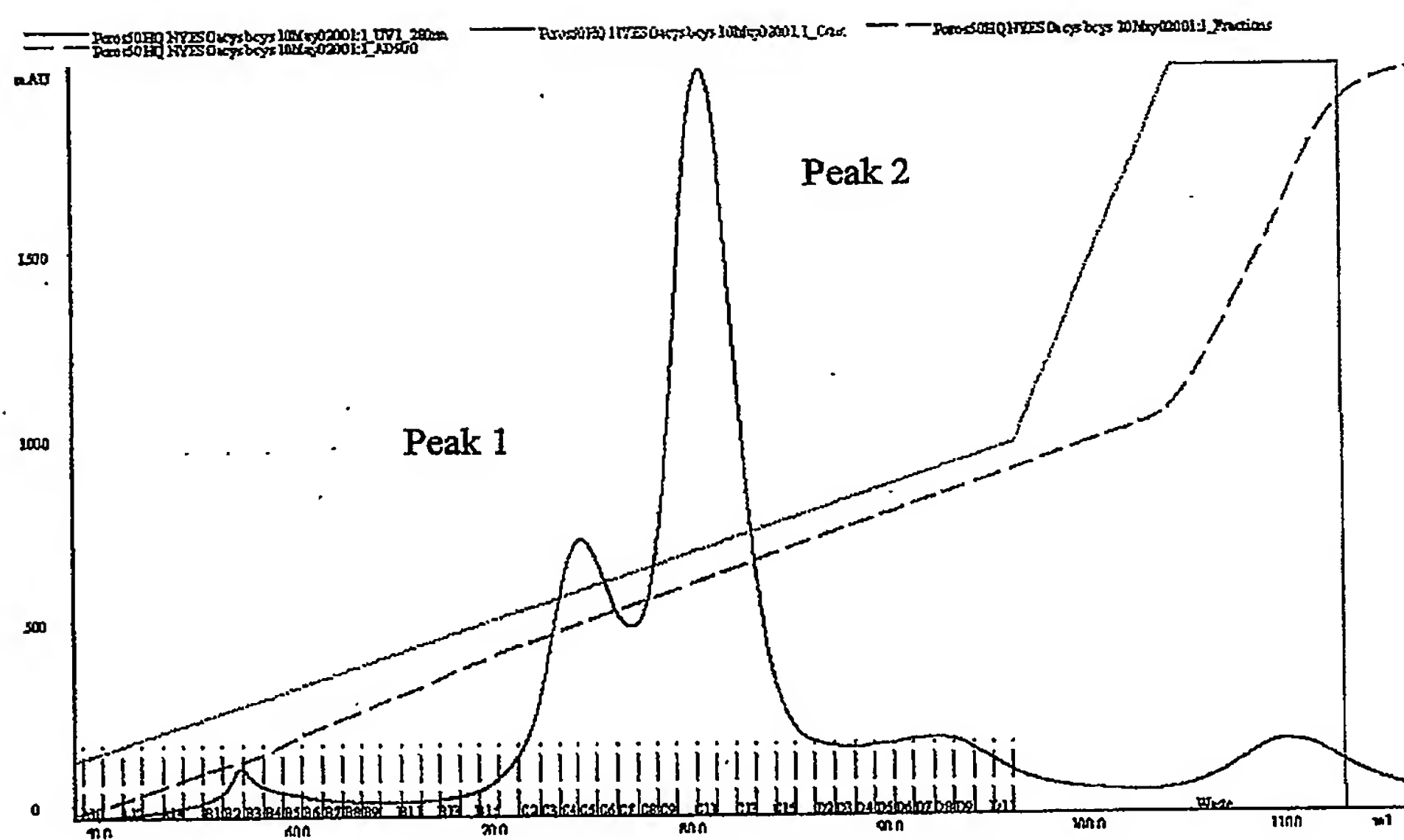


Figure 23

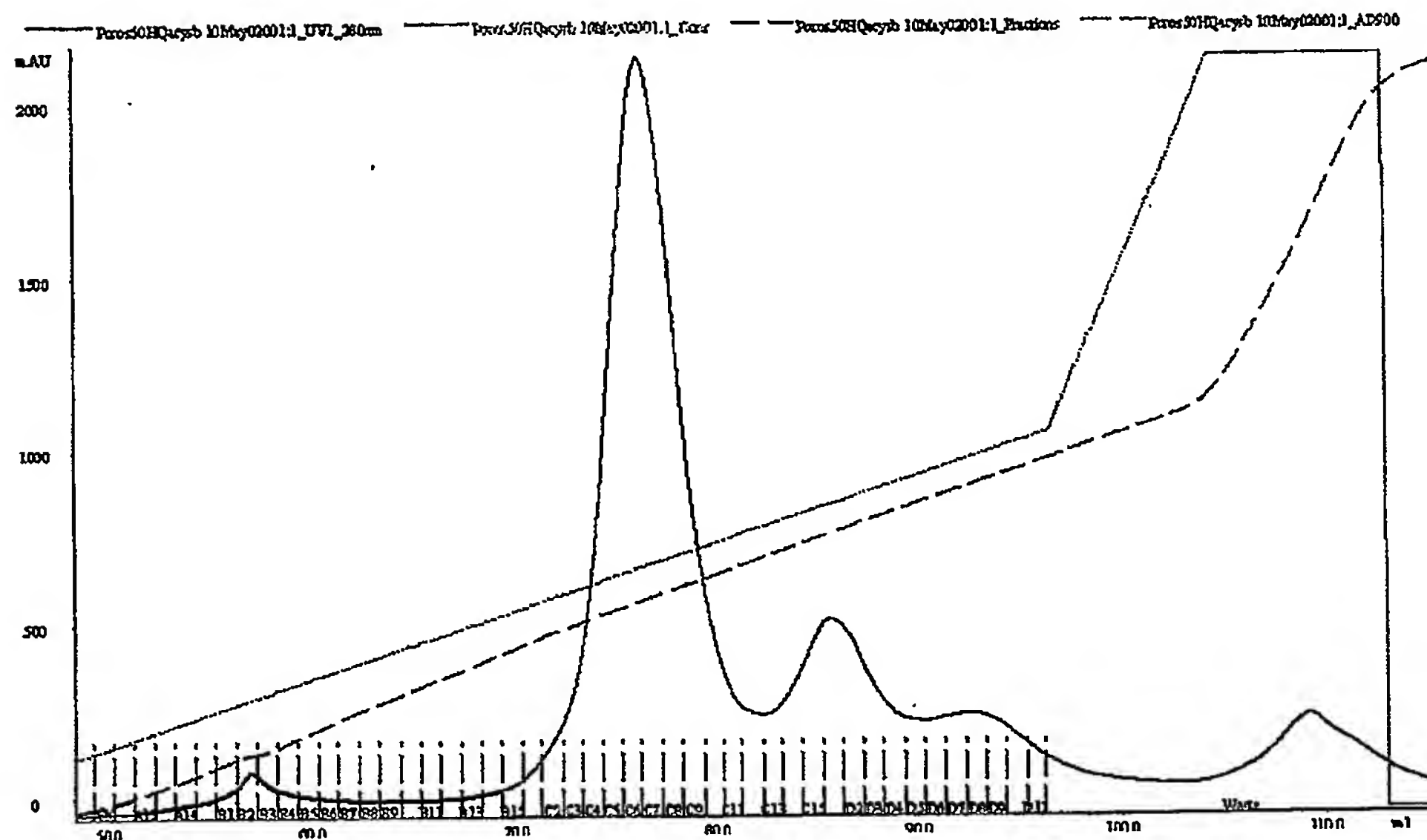
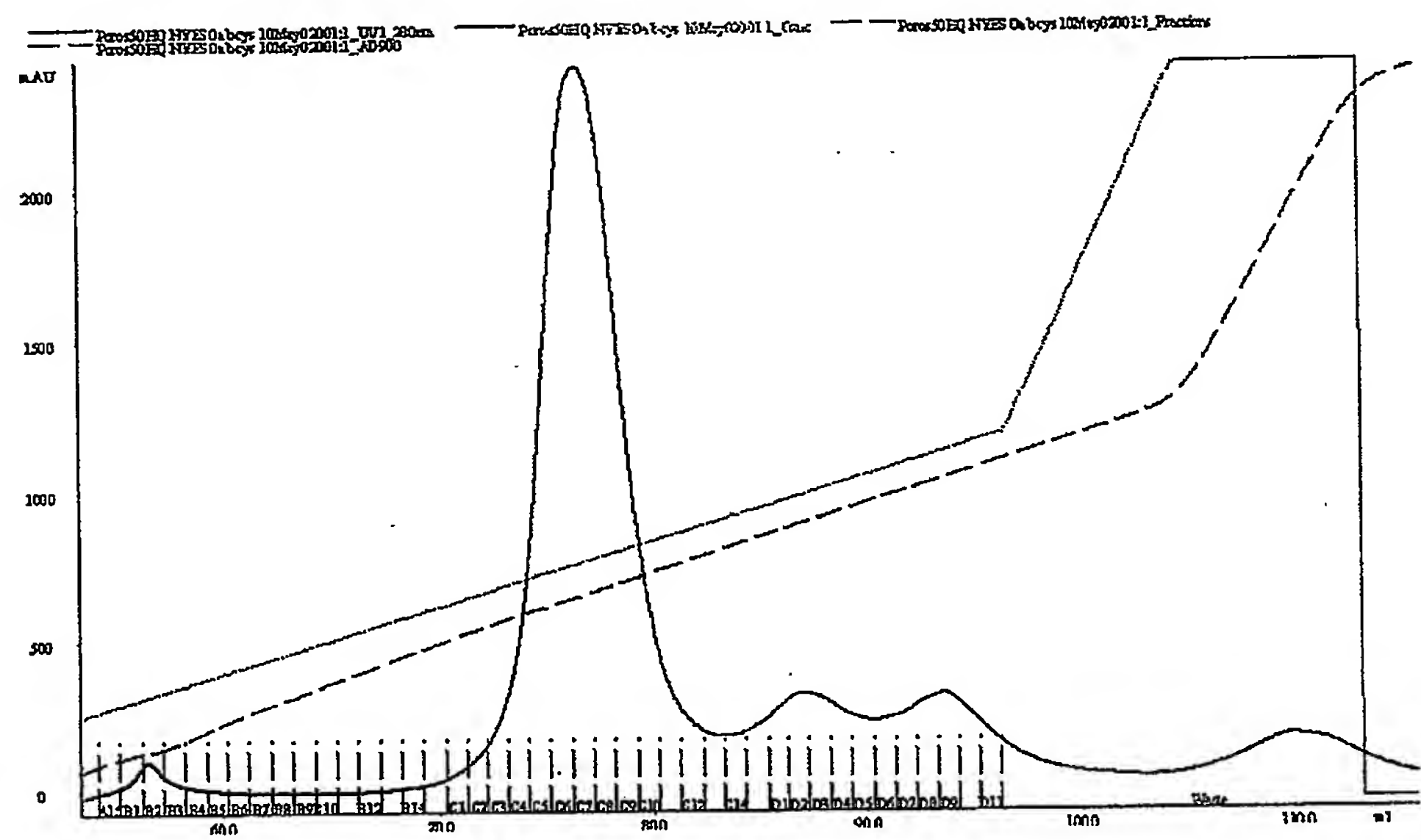
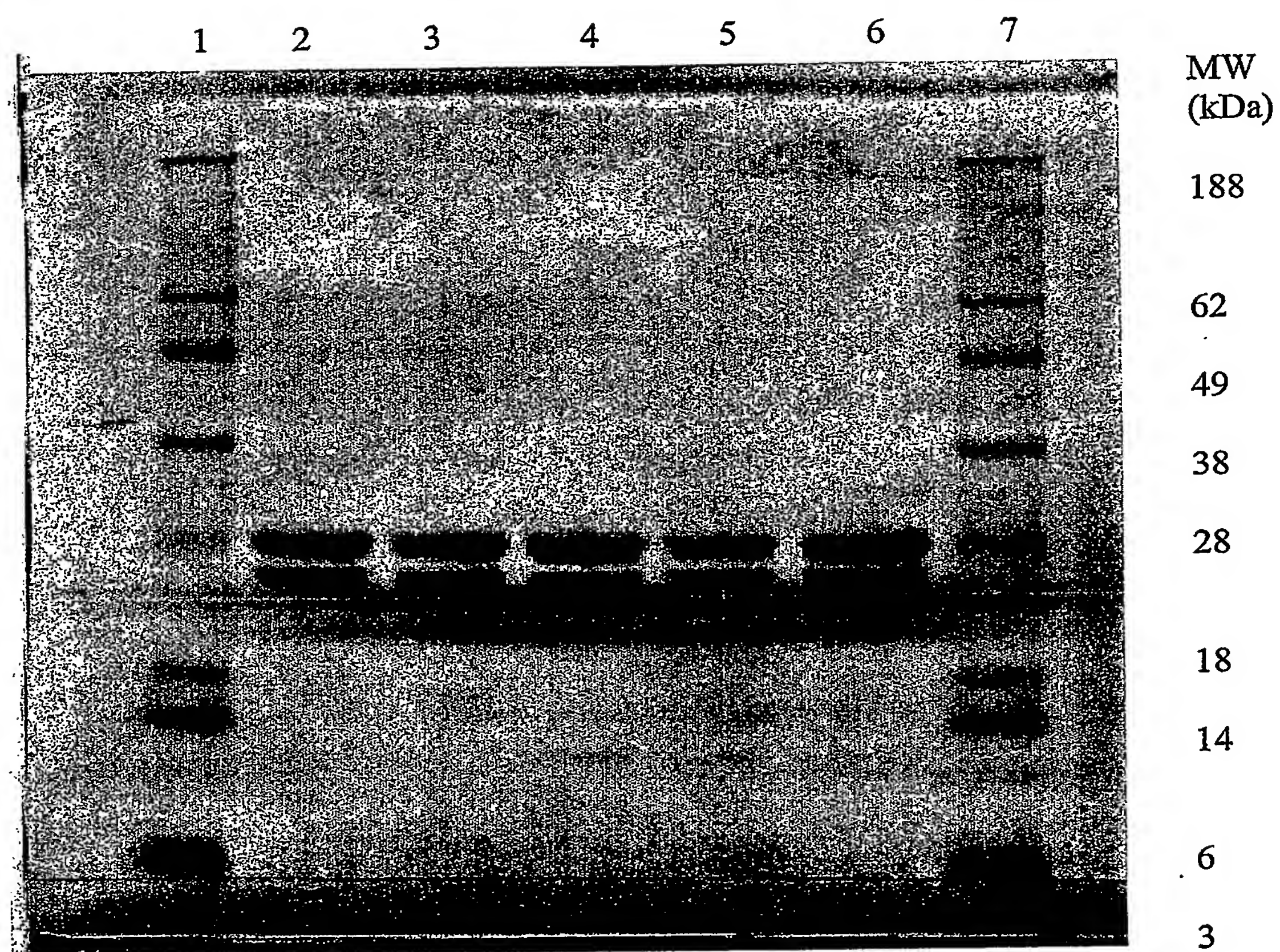


Figure 24



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Figure 25



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Figure 26

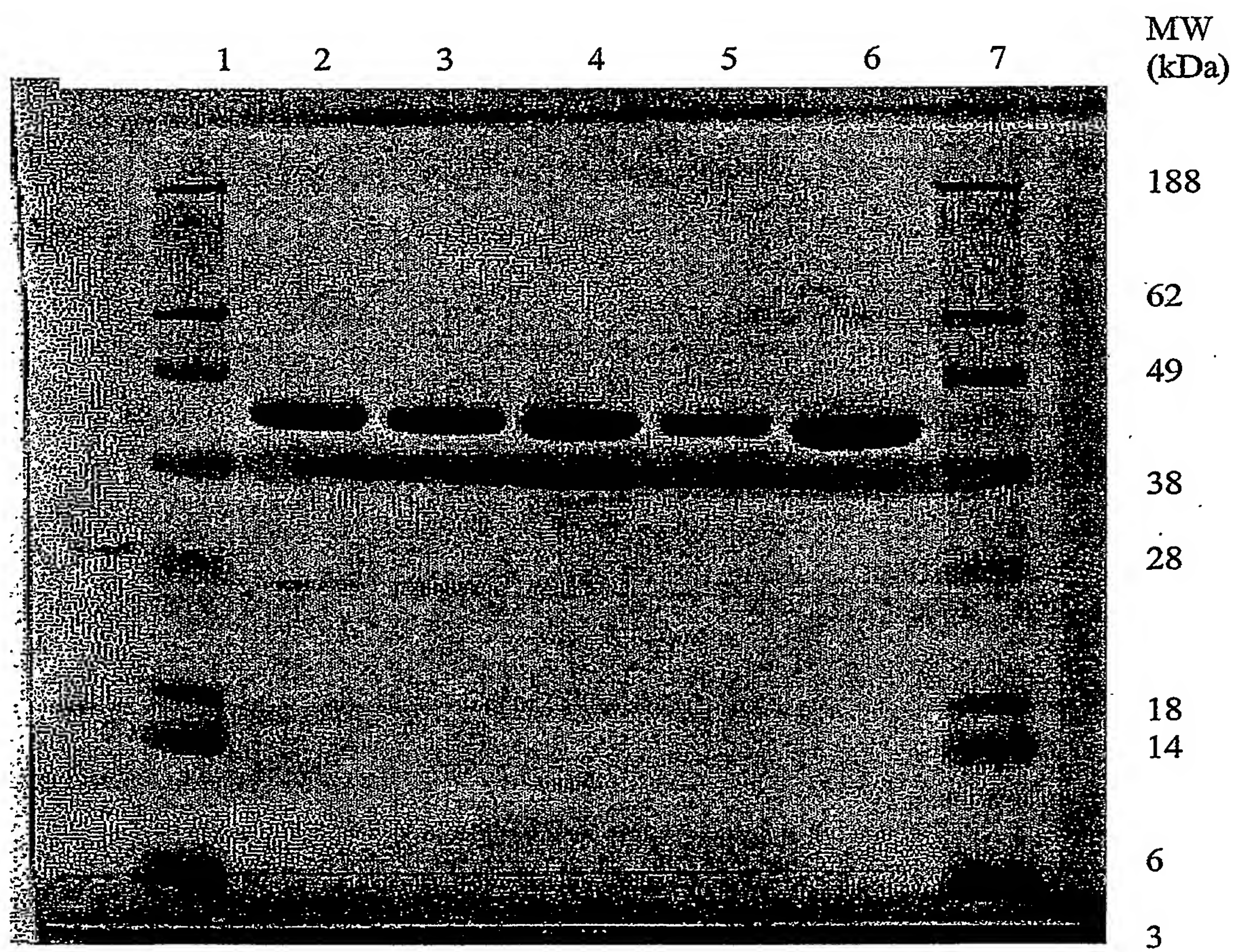


Figure 27

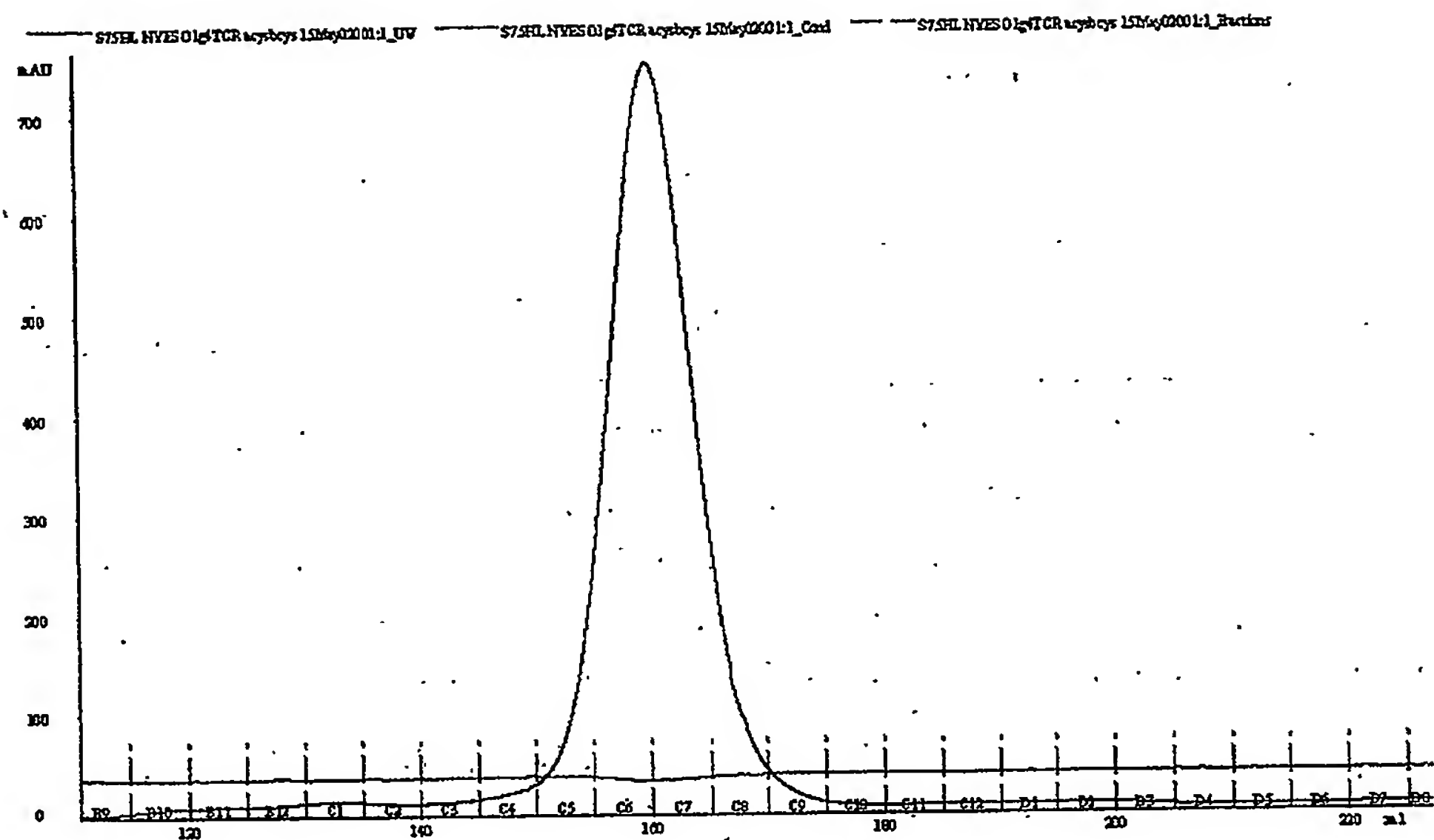
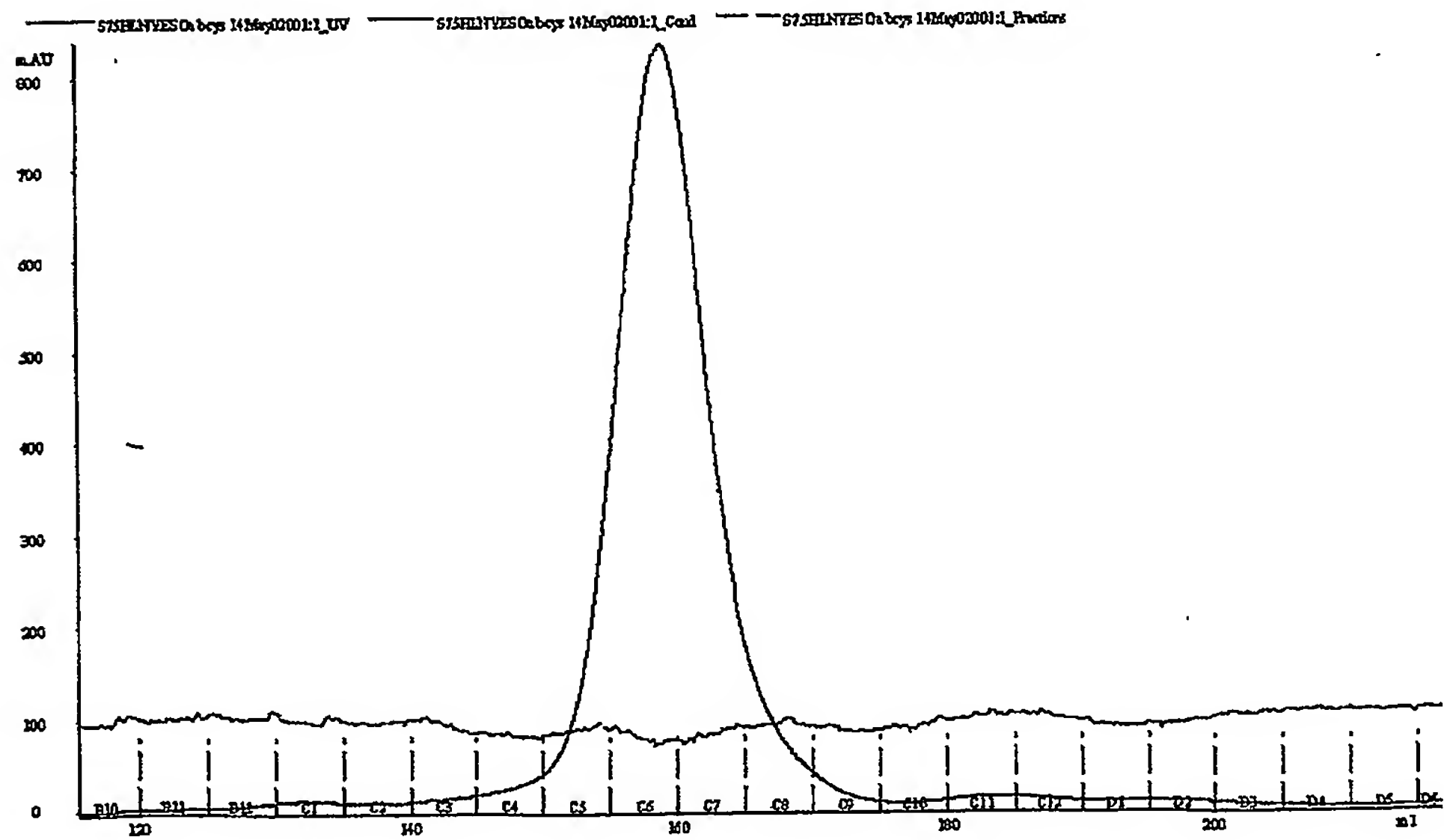
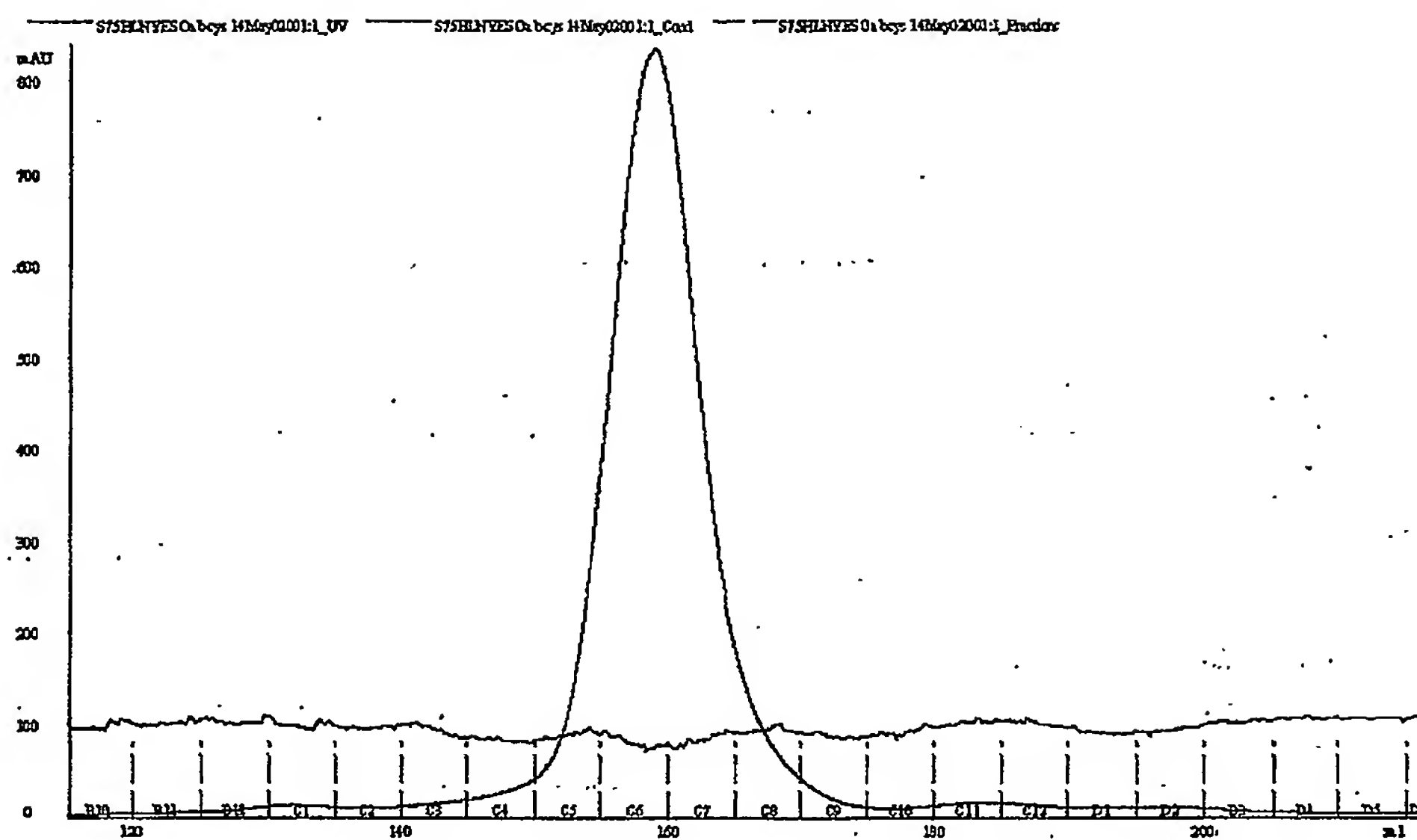


Figure 28



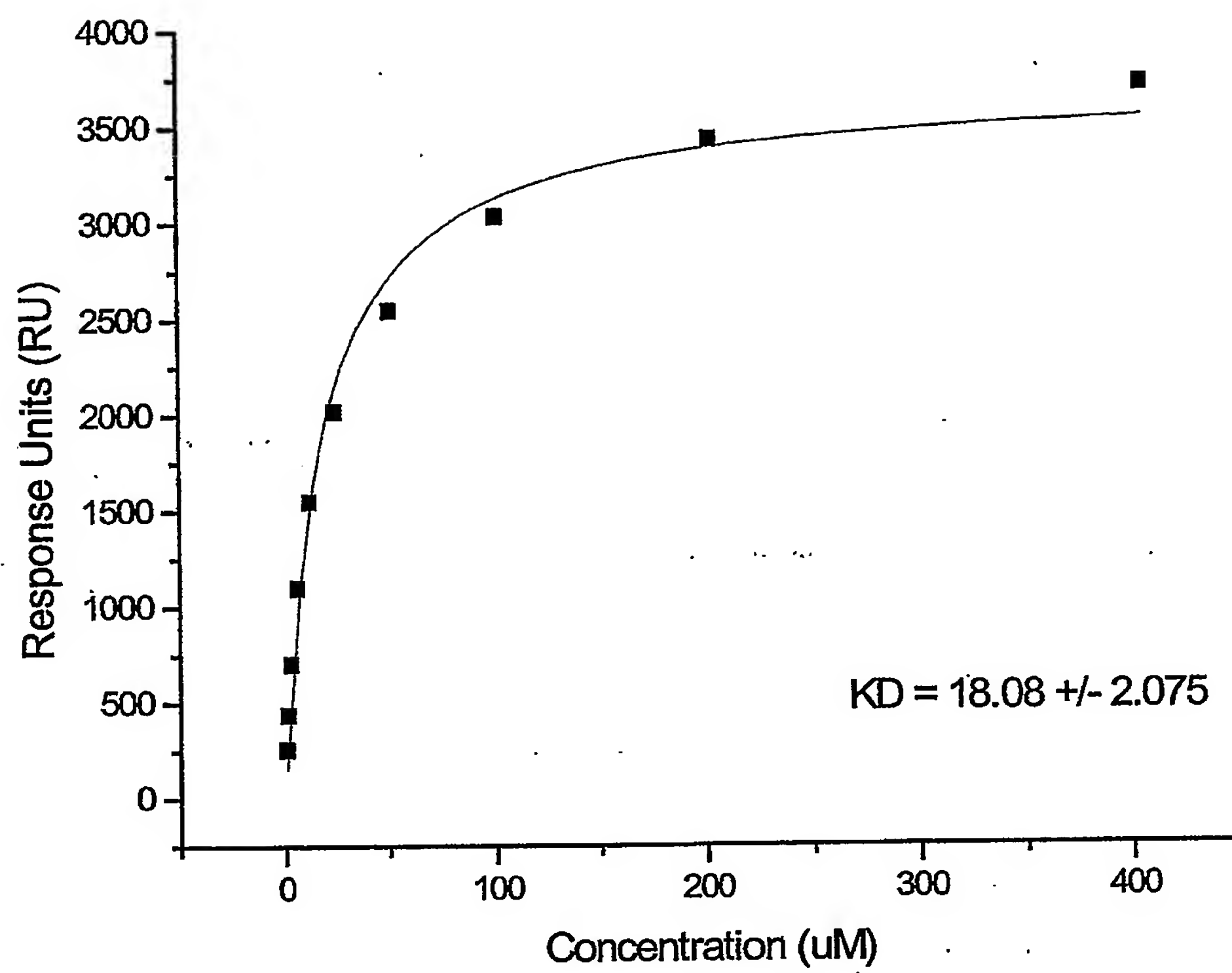
23/81

Figure 29



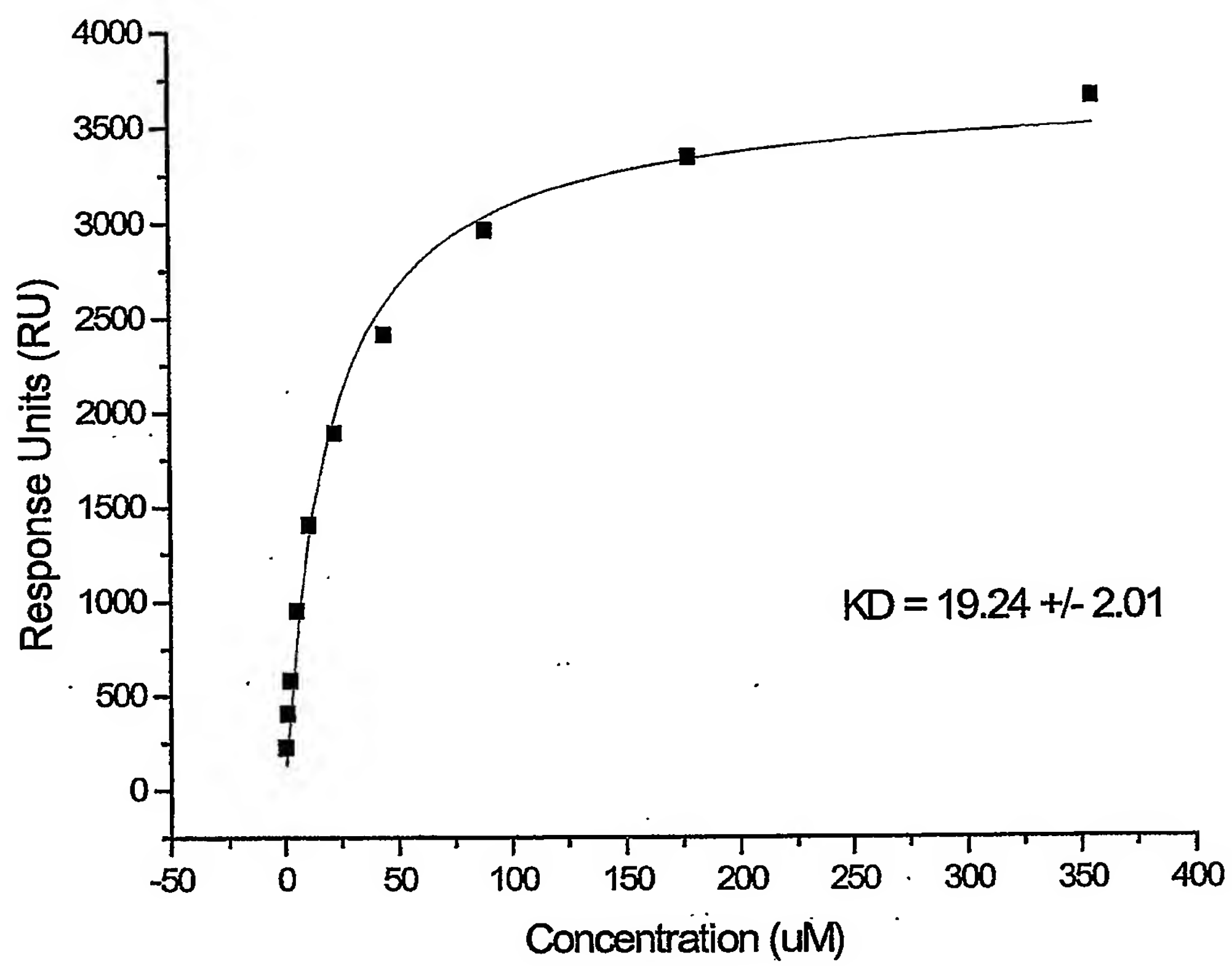
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Figure 30



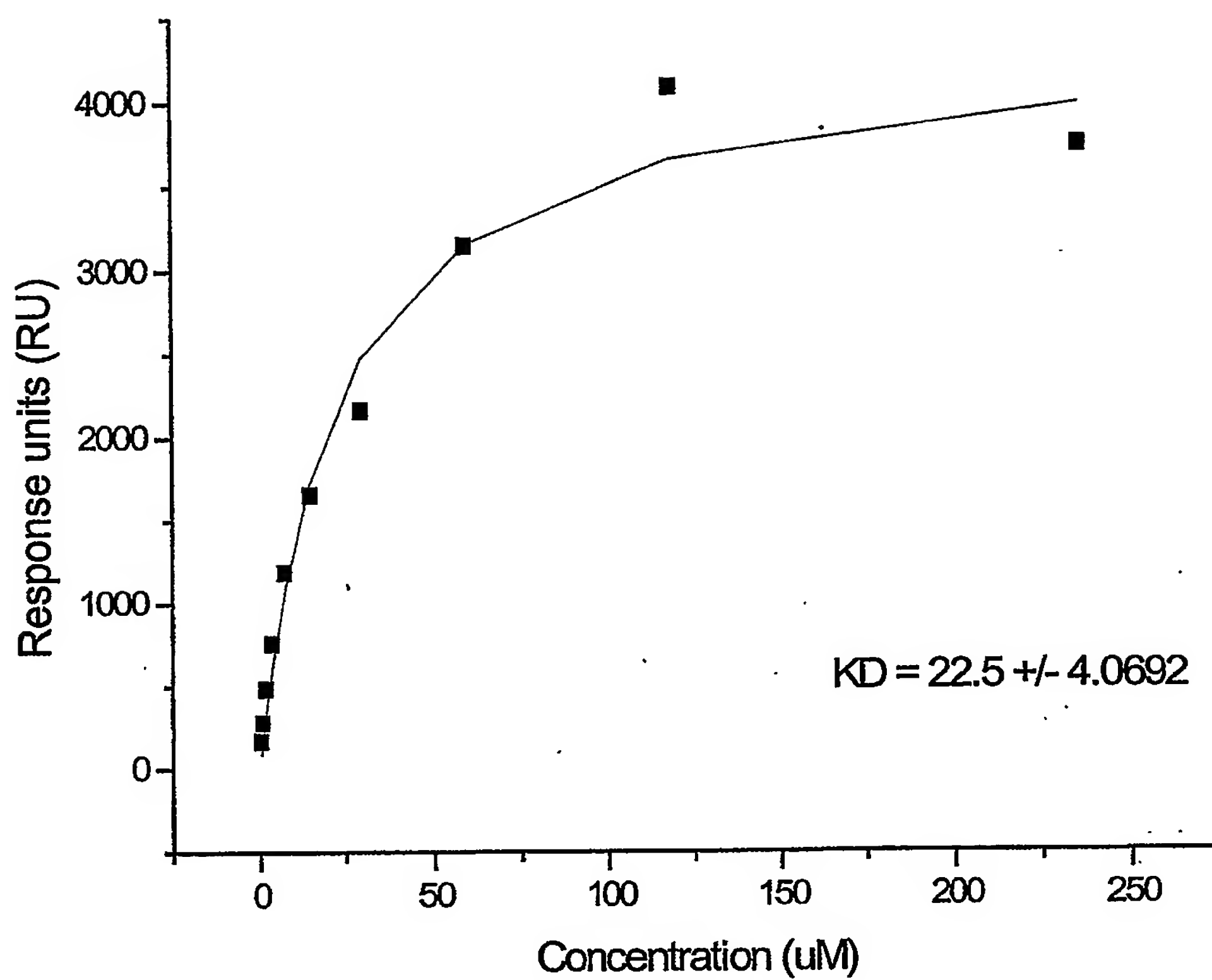
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Figure 31



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Figure 32



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Figure 33a

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Figure 33b

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Figure 34a

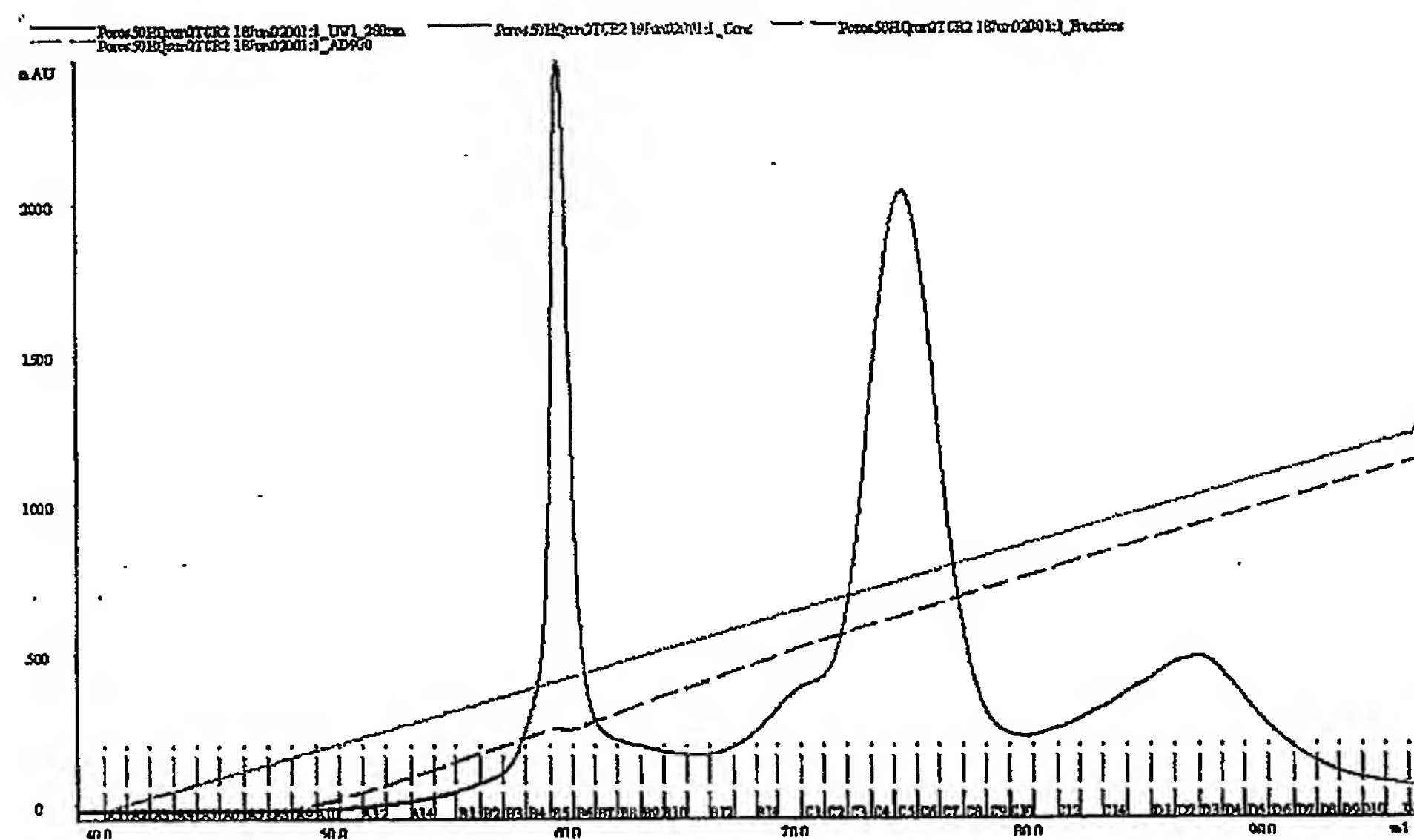
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VYQLRDSKSSDKSVCLFTDFDSQTNVSQSKDSDVYITDKC
VLDMRSMDFKSNSAVAWSNKSDFACANAFNNSIIPEDTFF
PSP ESS Stop

Figure 34b

MGVMQNPRHLVRRRGQEARLRCSPMKGHSHVYWYRQLP
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QVVRGDSAA YFCASSPQTGGTDTQYFGPGTRLTVLEDLKN
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AWGRAD Stop

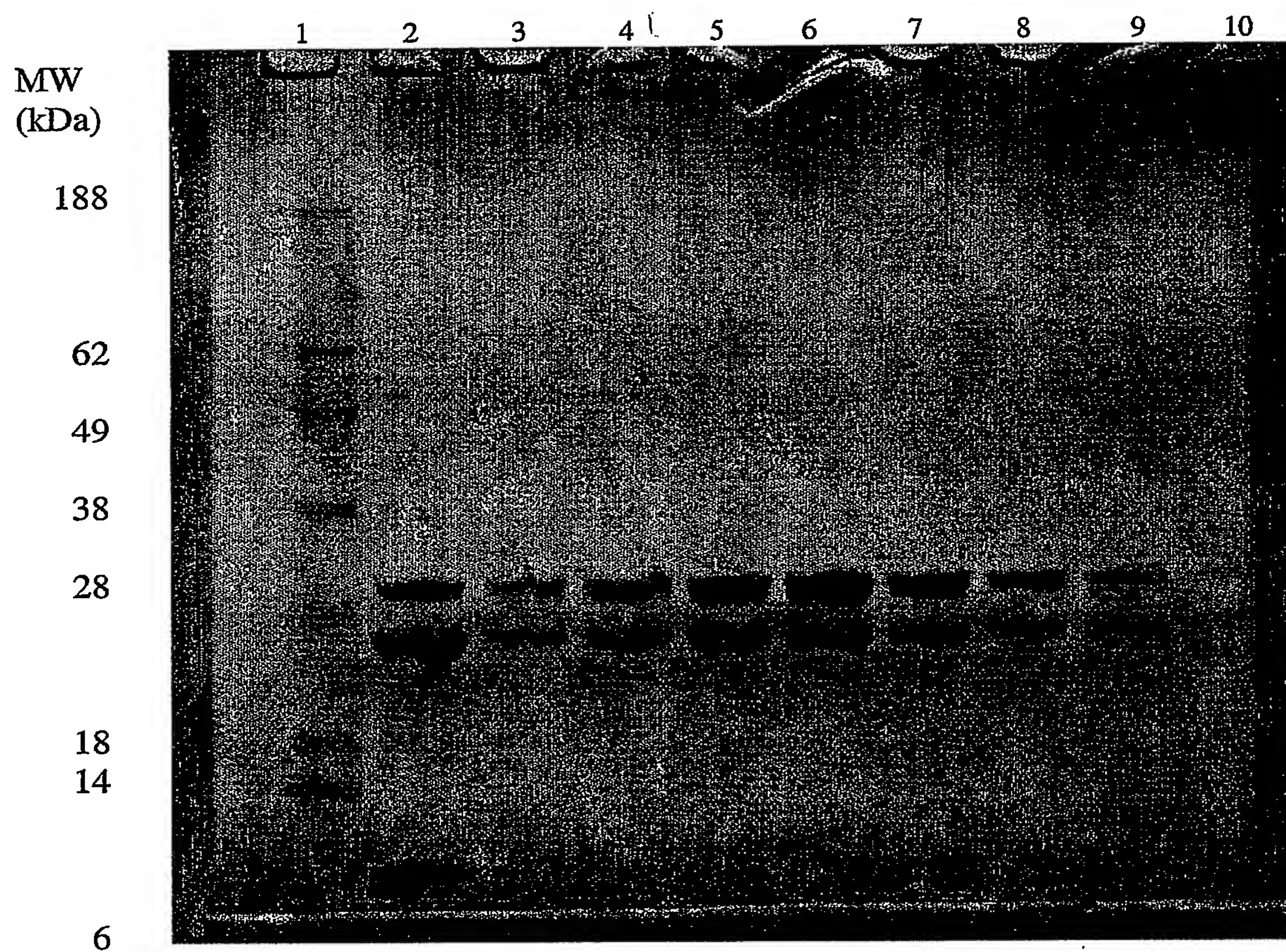
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Figure 35



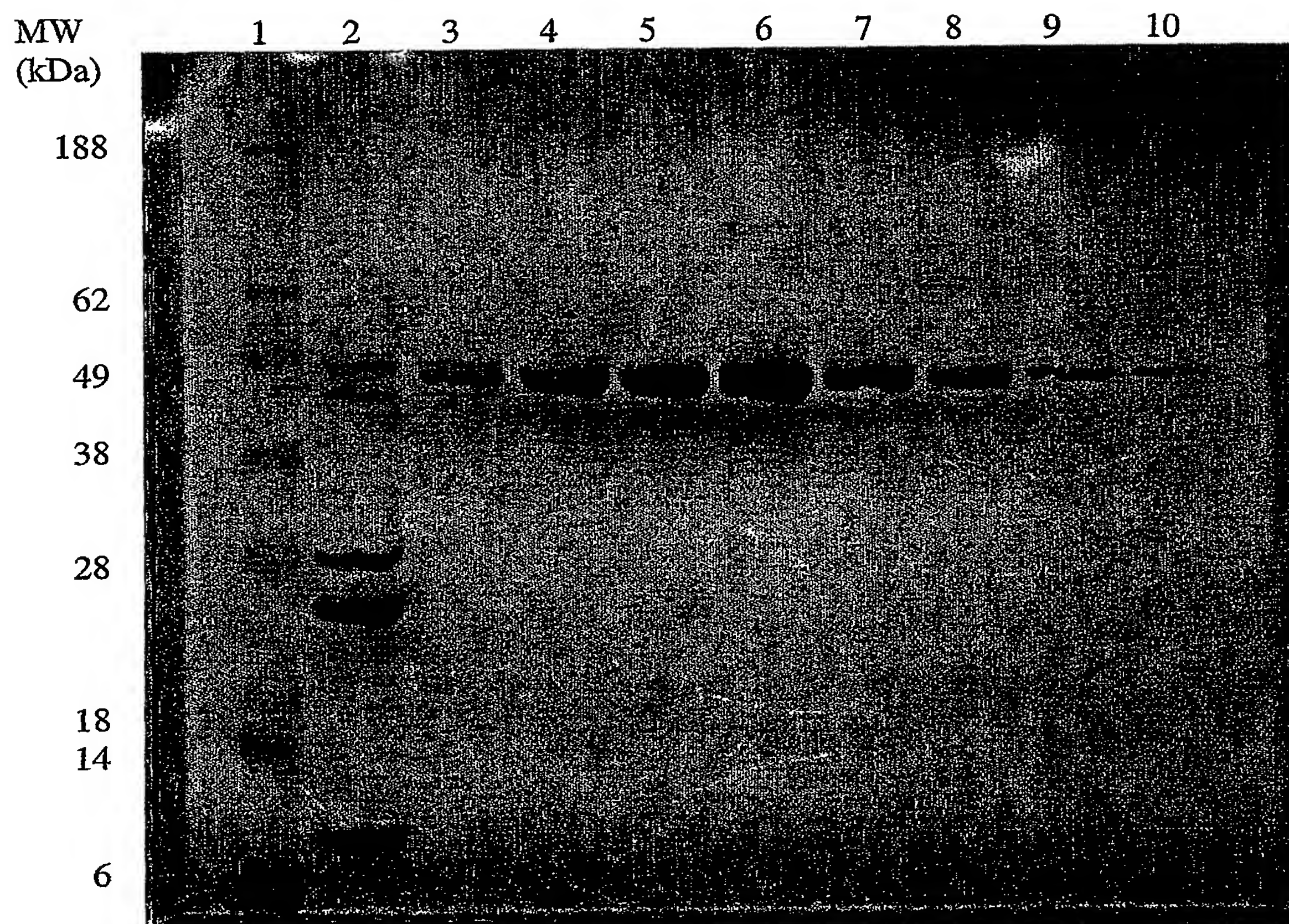
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Figure 36



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Figure 37



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Figure 38

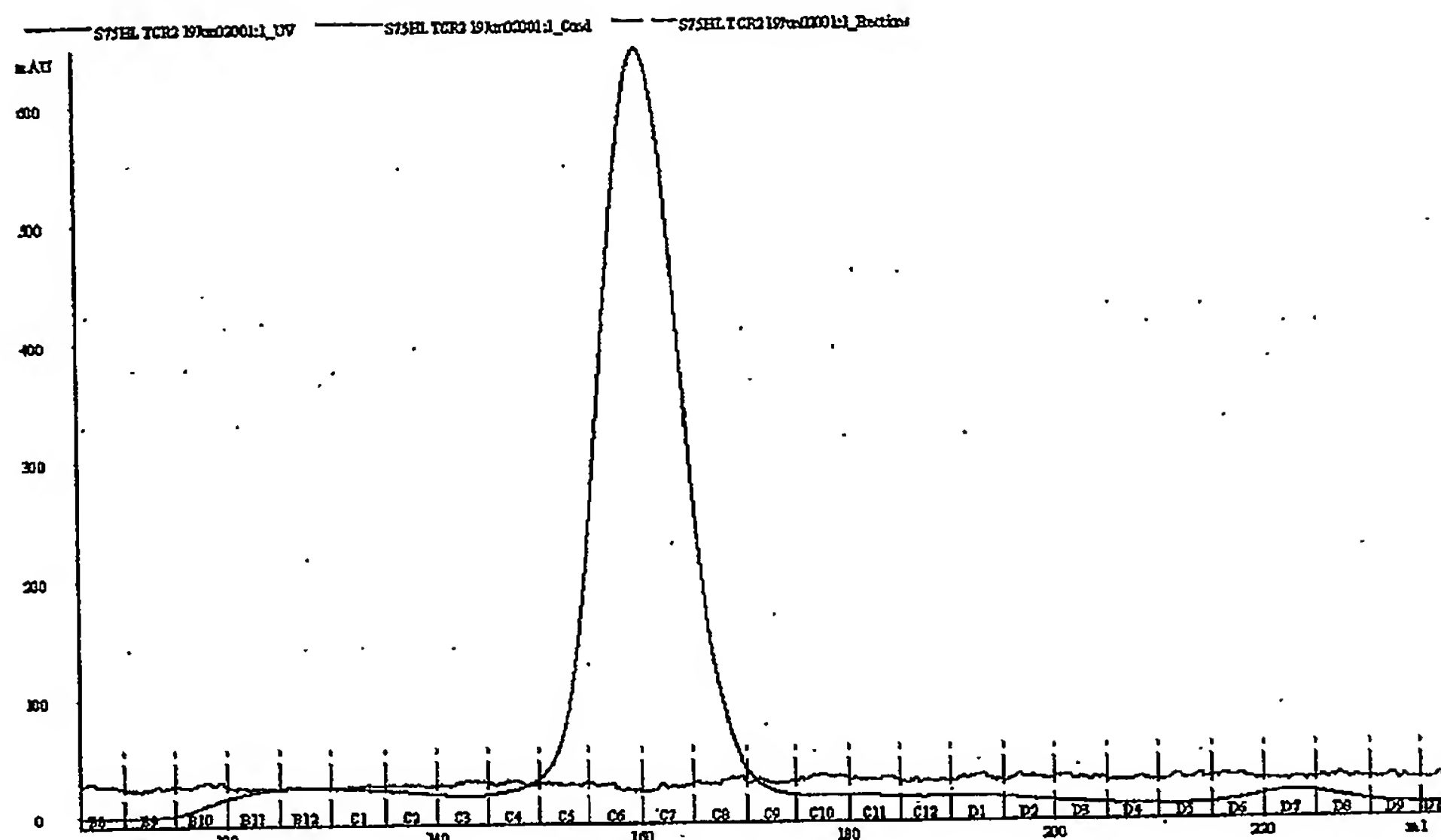


Figure 39a – T48→C α chain

atgcagaaggaagtggagcagaactctggacccctcagtgttccagagggagcca
 ttgcctctctcaactgcacttacagtgaccgaggttcccagtccttcttctggta
 cagacaatattctgggaaaagccctgagttgataatgtccatataactccaatggt
 gacaaagaagatggaagggtttacagcacagctcaataaagccagccagtatgttt
 ctctgctcatcagagactcccagcccagtgattcagccacctacctctgtgccgt
 tacaactgacagctgggggaaattgcagtttggagcagggacccaggttgtggtc
 accccagatatccagaaccctgaccctgccgtgtaccagctgagagactctaaat
 ccagtgacaagtctgtctgcctattcaccgattttgattctcaaacaatgtgtc
 acaaagtaaggattctgatgtgtatatcacagacaaaactgtgctagacatgagg
 tctatggacttcaagagcaacagtgctgtggcctggagcaacaaatctgactttg
 catgtgcaaacgccttcaacaacagcattattccagaagacaccttcttccccag
 cccagaaagttcctaa

Figure 39b – T48→C α chain

MQ
 K₁EVEQNSGPL SVPEGAIASL NCTYSDRGSQ SFFWYRQYSG KSPELIMSIY SNGDKEDGRF
 TAQLNKASQY VLLIRDSQP SDSATYLCAV TTDSWGKLQF GAGTQVVVTP DIQNPDPVY
 QLRDSKSSDK SVCLFTDFDS QTNVSQSKDS DVYITDKCVL DMRSMDFKSN SAVAWSNKSD
 FACANAFNNS IIPEDTEFFPS PESS*

Figure 40a – T45→C alpha chain DNA Sequence

Atgcagaaggaagtggagcagaactctggacccctcagtgttccagagggagcca
 ttgcctctctcaactgcacttacagtgaccgaggttcccagtccttcttctggta
 cagacaatattctgggaaaagccctgagttgataatgtccatataactccaatggt
 gacaaagaagatggaagggtttacagcacagctcaataaagccagccagtatgttt
 ctctgctcatcagagactcccagcccagtgattcagccacctacctctgtgccgt
 tacaactgacagctgggggaaattgcagtttggagcagggacccaggttgtggtc
 accccagatatccagaaccctgaccctgccgtgtaccagctgagagactctaaat
 ccagtgacaagtctgtctgcctattcaccgattttgattctcaaacaatgtgtc
 acaaagtaaggattctgatgtgtatatcactgacaaaactgtgctagacatgagg
 tctatggacttcaagagcaacagtgctgtggcctggagcaacaaatctgactttg
 catgtgcaaacgccttcaacaacagcattattccagaagacaccttcttccccag
 cccagaaagttcctaa

Figure 40b – T45→C alpha chain Amino Acid Sequence

MQ
 K₁EVEQNSGPL SVPEGAIASL NCTYSDRGSQ SFFWYRQYSG KSPELIMSIY SNGDKEDGRF
 TAQLNKASQY VLLIRDSQP SDSATYLCAV TTDSWGKLQF GAGTQVVVTP DIQNPDPVY
 QLRDSKSSDK SVCLFTDFDS QTNVSQSKDS DVYICDKTVL DMRSMDFKSN SAVAWSNKSD
 FACANAFNNS IIPEDTEFFPS PESS*

Figure 41a – S61→C alpha chain DNA Sequence

Atgcagaaggaagtggagcagaactctggacccctcagtgttccagagggagcca
ttgcctctctcaactgcacttacagtgaccgaggttcccagtccttcttctggta
cagacaatatctctgggaaaagccctgagttgataatgtccatatactccaatggt
gacaaagaagatggaaggtttacagcacagctcaataaagccagccagtatgttt
ctctgctcatcagagactcccagcccagtgattcagccacctacctctgtgccgt
tacaactgacagctgggggaaattgcagtttggagcagggacccaggttgtggtc
accccagatatccagaaccctgaccctgccgtgtaccagctgagagactctaaat
ccagtgacaagtctgtctgcctattcaccgattttgattctcaaacaatgtgtc
acaaagtaaggattctgatgtgtatatcacagacaaaactgtgctagacatgagg
tctatggacttcaagagcaacctgctgtggcctggagcaacaaatctgactttg
catgtgcaaacgccttcaacaacagcattattccagaagacaccttcttccccag
cccagaaagttcctaa

Figure 41b – S61→C alpha chain Amino Acid Sequence

MQ

K₁EVEQNSGPL SVPEGAIASL NCTYSDRGSQ SFFWYRQYSG KSPELIMSIY
SNGDKEDGRF TAQLNKASQY VLLIRDSQP SDSATYLCAV TTDSWGKLQF
GAGTQVVVTP DIQNPDPVAV QLRDSKSSDK SVCLFTDFDS QTNVSQSKDS
DVYITDKTVL DMRSMDFKSN CAVAWSNKSD FACANAFNNS IIPEDTFFPS PESS*

Figure 42a – L50→C alpha chain DNA Sequence

Atgcagaaggaagtggagcagaactctggacccctcagtgttccagagggagcca
ttgcctctctcaactgcacttacagtgaccgaggttcccagtccttcttctggta
cagacaatatctctgggaaaagccctgagttgataatgtccatatactccaatggt
gacaaagaagatggaaggtttacagcacagctcaataaagccagccagtatgttt
ctctgctcatcagagactcccagcccagtgattcagccacctacctctgtgccgt
tacaactgacagctgggggaaattgcagtttggagcagggacccaggttgtggtc
accccagatatccagaaccctgaccctgccgtgtaccagctgagagactctaaat
ccagtgacaagtctgtctgcctattcaccgattttgattctcaaacaatgtgtc
acaaagtaaggattctgatgtgtatatcacagacaaaactgtgtgacatgagg
tctatggacttcaagagcaacagtgctgtggcctggagcaacaaatctgactttg
catgtgcaaacgccttcaacaacagcattattccagaagacaccttcttccccag
cccagaaagttcctaa

Figure 42b – L50→C alpha chain Amino Acid Sequence

MQ

K₁EVEQNSGPL SVPEGAIASL NCTYSDRGSQ SFFWYRQYSG KSPELIMSIY
SNGDKEDGRF TAQLNKASQY VLLIRDSQP SDSATYLCAV TTDSWGKLQF
GAGTQVVVTP DIQNPDPVAV QLRDSKSSDK SVCLFTDFDS QTNVSQSKDS
DVYITDKTVL DMRSMDFKSN SAVAWSNKSD FACANAFNNS IIPEDTFFPS PESS*

Figure 43a – Y10→C α chain

atgcagaaggaagtggagcagaactctggacccctcagtgttccagagggagcca
 ttgcctctctcaactgcacttacagtgaccgaggttcccagtccttcttctggta
 cagacaatatctctgggaaaagccctgagttgataatgtccatatactccaatggt
 gacaaagaagatggaagggtttacagcacagctcaataaagccagccagtatgttt
 ctctgctcatcagagactcccagcccagtgattcagccacctacctctgtgccgt
 tacaactgacagctggggggaaattgcagtttggagcagggacccaggttgtggtc
 accccagatatccagaaccctgaccctgccgtgagcagctgagagactctaaat
 ccagtgacaagtctgtctgcctattcaccgatttttgattctcaaacaatgtgtc
 acaaagtaaggattctgatgtgtatatcacagacaaaactgtgctagacatgagg
 tctatggacttcaagagcaacagtgctgtggcctggagcaacaaatctgactttg
 catgtgcaaacgccttcaacaacagcattattccagaagacaccttcttccccag
 cccagaaagttcctaa

Figure 43b – Y10→C α chain

MQ

K₁EVEQNSGPL SVPEGAIASL NCTYSDRGSQ SFFWYRQYSG KSPELIMSIY
 SNGDKEDGRF TAQLNKASQY VLLIRDSQP SDSATYLCAV TTDSWGKLQF
 GAGTQVVVTP DIQNPDPVAV QLRDSKSSDK SVCLFTDFDS QTNVSQSKDS
 DVYITDKTVL DMRSMDFKSN SAVAWSNKSD FACANAFNNS IIPEDTFFPS PESS*

Figure 44a – S15→C α chain

atgcagaaggaagtggagcagaactctggacccctcagtgttccagagggagcca
 ttgcctctctcaactgcacttacagtgaccgaggttcccagtccttcttctggta
 cagacaatatctctgggaaaagccctgagttgataatgtccatatactccaatggt
 gacaaagaagatggaagggtttacagcacagctcaataaagccagccagtatgttt
 ctctgctcatcagagactcccagcccagtgattcagccacctacctctgtgccgt
 tacaactgacagctggggggaaattgcagtttggagcagggacccaggttgtggtc
 accccagatatccagaaccctgaccctgccgtgtaccagctgagagactgaaat
 ccagtgacaagtctgtctgcctattcaccgatttttgattctcaaacaatgtgtc
 acaaagtaaggattctgatgtgtatatcacagacaaaactgtgctagacatgagg
 tctatggacttcaagagcaacagtgctgtggcctggagcaacaaatctgactttg
 catgtgcaaacgccttcaacaacagcattattccagaagacaccttcttccccag
 cccagaaagttcctaa

Figure 44b – S15→C α chain

MQ

K₁EVEQNSGPL SVPEGAIASL NCTYSDRGSQ SFFWYRQYSG KSPELIMSIY
 SNGDKEDGRF TAQLNKASQY VLLIRDSQP SDSATYLCAV TTDSWGKLQF
 GAGTQVVVTP DIQNPDPVAV QLRDCKSSDK SVCLFTDFDS QTNVSQSKDS
 DVYITDKTVL DMRSMDFKSN SAVAWSNKSD FACANAFNNS IIPEDTFFPS PESS*

Figure 45a – L12→C α chain

atgcagaaggaagtggagcagaactctggacccctcagtgttccagagggagcca
 ttgcctctctcaactgcacttacagtgaccgaggttcccagtccttcttctggta
 cagacaatattctgggaaaagccctgagttgataatgtccatataactccaatggt
 gacaaagaagatggaagggtttacagcacagctcaataaagccagccagtatgttt
 ctctgctcatcagagactcccagcccagtgattcagccacctacctctgtgccgt
 tacaactgacagctgggggaaattgcagtttggagcagggacccaggttgtggtc
 accccagatatccagaaccctgaccctgccgtgtaccagcagagactctaaat
 ccagtgacaagtctgtctgcctattcaccgattttgattctcaaacaatgtgtc
 acaaagtaaggattctgatgtgtatatcacagacaaaactgtgctagacatgagg
 tctatggacttcaagagcaacagtgctgtggcctggagcaacaaatctgactttg
 catgtgcaaacgccttcaacaacagcattattccagaagacaccttcttccccag
 cccagaaagttcctaa

Figure 45b – L12→C α chain

MQ

K₁EVEQNSGPL SVPEGAIASL NCTYSDRGSQ SFFWYRQYSG KSPELIMSIY
 SNGDKEDGRF TAQLNKASQY VSLIIRDSQP SDSATYLCAV TTDSWGKLQF
 GAGTQVVVTP DIQNPDPAVY QCRDSKSSDK SVCLFTDFDS QTNVSQSKDS
 DVIITDKTVL DMRSMDFKSN SAVAWSNKSD FACANAFNNS IIPEDTFFPS PESS*

Figure 46a – V22→C α chain

atgcagaaggaagtggagcagaactctggacccctcagtgttccagagggagcca
 ttgcctctctcaactgcacttacagtgaccgaggttcccagtccttcttctggta
 cagacaatattctgggaaaagccctgagttgataatgtccatataactccaatggt
 gacaaagaagatggaagggtttacagcacagctcaataaagccagccagtatgttt
 ctctgctcatcagagactcccagcccagtgattcagccacctacctctgtgccgt
 tacaactgacagctgggggaaattgcagtttggagcagggacccaggttgtggtc
 accccagatatccagaaccctgaccctgccgtgtaccagctgagagactctaaat
 ccagtgacaagtctcctgcctattcaccgattttgattctcaaacaatgtgtc
 acaaagtaaggattctgatgtgtatatcacagacaaaactgtgctagacatgagg
 tctatggacttcaagagcaacagtgctgtggcctggagcaacaaatctgactttg
 catgtgcaaacgccttcaacaacagcattattccagaagacaccttcttccccag
 cccagaaagttcctaa

Figure 46b – V22→C α chain

MQ

K₁EVEQNSGPL SVPEGAIASL NCTYSDRGSQ SFFWYRQYSG KSPELIMSIY
 SNGDKEDGRF TAQLNKASQY VSLIIRDSQP SDSATYLCAV TTDSWGKLQF
 GAGTQVVVTP DIQNPDPAVY QLRDSKSSDK SCLFTDFDS QTNVSQSKDS
 DVIITDKTVL DMRSMDFKSN SAVAWSNKSD FACANAFNNS IIPEDTFFPS PESS*

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Figure 47a – M52→C α chain

atgcagaaggaagtggagcagaactctggacccctcagtgttccagagggagcca
 ttgcctctctcaactgcacttacagtgaccgaggttcccagtccttcttctggta
 cagacaatatctctgggaaaagccctgagttgataatgtccatatactccaatggt
 gacaaagaagatggaagggtttacagcacagctcaataaagccagccagtatgttt
 ctctgctcatcagagactcccagcccagtgattcagccacctacctctgtgccgt
 tacaactgacagctgggggaaattgcagtttggagcagggacccaggttgtggtc
 accccagatatccagaaccctgaccctgccgtgtaccagctgagagactctaat
 ccagtgacaagtctgtctgcctattcaccgattttgattctcaaacaatgtgtc
 acaaagtaaggattctgatgtgtatatcacagacaaaactgtgctagac[box]agg
 tctatggacttcaagagcaacagtgctgtggcctggagcaacaaatctgactttg
 catgtgcaaacgccttcaacaacagcattattccagaagacaccttcttccccag
 cccagaaagttcctaa

Figure 47b – M52→C α chain

MQ

K₁EVEQNSGPL SVPEGAIASL NCTYSDRGSQ SFFWYRQYSG KSPELIMSIY
 SNGDKEDGRF TAQLNKASQY VLLIRDSQP SDSATYLCAV TTDSWGKLQF
 GAGTQVVVTP DIQNPDPVAV QLRDSKSSDK SVCLFTDFDS QTNVSQSKDS
 DVYITDKTVL DCRSMDFKSN SAVAWSNKSD FACANAFNNS IIPEDTFFPS PESS*

Figure 48a – Y43→C α chain

atgcagaaggaagtggagcagaactctggacccctcagtgttccagagggagcca
 ttgcctctctcaactgcacttacagtgaccgaggttcccagtccttcttctggta
 cagacaatatctctgggaaaagccctgagttgataatgtccatatactccaatggt
 gacaaagaagatggaagggtttacagcacagctcaataaagccagccagtatgttt
 ctctgctcatcagagactcccagcccagtgattcagccacctacctctgtgccgt
 tacaactgacagctgggggaaattgcagtttggagcagggacccaggttgtggtc
 accccagatatccagaaccctgaccctgccgtgtaccagctgagagactctaat
 ccagtgacaagtctgtctgcctattcaccgattttgattctcaaacaatgtgtc
 acaaagtaaggattctgatgtgt[box]tatcacagacaaaactgtgctagacatgagg
 tctatggacttcaagagcaacagtgctgtggcctggagcaacaaatctgactttg
 catgtgcaaacgccttcaacaacagcattattccagaagacaccttcttccccag
 cccagaaagttcctaa

Figure 48b – Y43→C α chain

MQ

K₁EVEQNSGPL SVPEGAIASL NCTYSDRGSQ SFFWYRQYSG KSPELIMSIY
 SNGDKEDGRF TAQLNKASQY VLLIRDSQP SDSATYLCAV TTDSWGKLQF
 GAGTQVVVTP DIQNPDPVAV QLRDSKSSDK SVCLFTDFDS QTNVSQSKDS

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Figure 49a – Ser57→C β chain

atgaacgctggtgtcactcagacccccaaaattccagggtcctgaagacaggacaga
gcatgacactgcagtgtgcccaggatatgaaccatgaatacatgtcctggtatcg
acaagacccaggcatggggctgaggctgattcattactcagttggtgctggtatc
actgaccaaggagaagtccccaatggctacaatgtctccagatcaaccacagagg
atttcccgtcaggctgctgtcggctgctccctcccagacatctgtgtacttctg
tgccagcaggccgggactagcgggagggcgaccagagcagtacttcggggccgggc
accaggctcacgggtcacagaggacctgaaaaacgtgttcccacccgagggtcgctg
tgtttgagccatcagaagcagagatctccacacccccaaaaggccacactggtgtg
cctggccacaggcttctaccccgaccacgtggagctgagctggtgggtgaatggg
aaggaggtgcacagtgggggtcagacagacccgcagcccctcaaggagcagcccg
ccctcaatgactccagatacgctctgagcagccgcctgagggtctcggccacctt
ctggcaggacccccgcaaccacttccgctgtcaagtccagttctacgggctctcg
gagaatgacgagtggacccaggatagggccaaaccggtcaccagatcgtcagcg
ccgaggcctggggtagagcagactaa

Figure 49b Ser57→C β chain

M

N₁AGVTQTPKF QVLKTGQSMT LQCAQDMNHE YMSWYRQDPG MGLRLIHYSV
GAGITDQGEV PNGYNVSRST TEDFPLRLLS AAPSTSVYF CASRPGLAGG
RPEQYFGPGT RLTVTEDLKN VFPPEVAVFE PSEAEISHTQ KATLVCLATG
FYPDHVELSW WVNGKEVHSG VCTDPQPLKE QPALNDSRYA LSSRLRVSAT
FWQDPRNHFR CQVQFYGLSE NDEWTQDRAK PVTQIVSAEA WGRAD*

Figure 50a – Ser77→C β chain

atgaacgctggtgtcactcagacccccaaaattccagggtcctgaagacaggacaga
gcatgacactgcagtgtgcccaggatatgaaccatgaatacatgtcctggtatcg
acaagacccaggcatggggctgaggctgattcattactcagttggtgctggtatc
actgaccaaggagaagtccccaatggctacaatgtctccagatcaaccacagagg
atttcccgtcaggctgctgtcggctgctccctcccagacatctgtgtacttctg
tgccagcaggccgggactagcgggagggcgaccagagcagtacttcggggccgggc
accaggctcacgggtcacagaggacctgaaaaacgtgttcccacccgagggtcgctg
tgtttgagccatcagaagcagagatctccacacccccaaaaggccacactggtgtg
cctggccacaggcttctaccccgaccacgtggagctgagctggtgggtgaatggg
aaggaggtgcacagtgggggtcagcacagacccgcagcccctcaaggagcagcccg
ccctcaatgactccagatacgctctgtagcagccgcctgagggtctcggccacctt
ctggcaggacccccgcaaccacttccgctgtcaagtccagttctacgggctctcg
gagaatgacgagtggacccaggatagggccaaaccggtcaccagatcgtcagcg
ccgaggcctggggtagagcagactaa

Figure 50b Ser77→C β chain

M

N₁AGVTQTPKF QVLKTGQSMT LQCAQDMNHE YMSWYRQDPG MGLRLIHYSV
GAGITDQGEV PNGYNVSRST TEDFPLRLLS AAPSTSVYF CASRPGLAGG
RPEQYFGPGT RLTVTEDLKN VFPPEVAVFE PSEAEISHTQ KATLVCLATG
FYPDHVELSW WVNGKEVHSG VSTDPOPLKE QPALNDSRYA LCSRLRVSAT
FWQDPRNHFR CQVQFYGLSE NDEWTQDRAK PVTQIVSAEA WGRAD*

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Figure 51a – Ser17→C β chain

atgaacgctggtgtcactcagacccccaaaattccaggtcctgaagacaggacaga
gcatgacactgcagtgtgccaggatatgaaccatgaatacatgtcctggtatcg
acaagacccaggcatggggctgaggctgattcattactcagttggtgctggtatc
actgaccaaggagaagtccccaatggctacaatgtctccagatcaaccacagagg
atctcccgctcaggctgctgtcggtgctccctcccagacatctgtgtacttctg
tgccagcaggccgggactagcgggagggcgaccagagcagtagtacttcgggcccgggc
accaggctcacggtcacagaggacctgaaaaacgtgttcccacccgaggctcgctg
tgtttgagcca[box]gaagcagagatctcccacacccaaaaggccacactggtgtg
cctggccacaggcttctaccccgaccacgtggagctgagctggtgggtgaatggg
aaggaggtgcacagtgggggtcagcacagacccgcagccccctcaaggagcagcccg
ccctcaatgactccagatacgctctgagcagccgcctgagggtctcgccacctt
ctggcaggacccccgcaaccacttccgctgtcaagtccagttctacgggctctcg
gagaatgacgagtggacccaggatagggccaaacccgtcaccagatcgtcagcg
ccgaggcctggggtagagcagactaa

Figure 51b Ser17→C β chain

M

N₁AGVTQTPKF QVLKTGQSMT LQCAQDMNHE YMSWYRQDPG MGLRLIHYSV
GAGITDQGEV PNGYNVSRST TEDFPLRLLS AAPSTSVYF CASRPGLAGG
RPEQYFGPGT RLTVTEDLKN VFPPEVAVFE PCEAEISHTQ KATLVCLATG
FYPDHVELSW WVNGKEVHSG VSTDPOPLKE QPALNDSRYA LSSRLRVSAT
FWQDPRNHFR CQVQFYGLSE NDEWTQDRAK PVTQIVSAEA WGRAD*

Figure 52a – Val 13→C β chain

atgaacgctggtgtcactcagacccccaaaattccaggtcctgaagacaggacaga
gcatgacactgcagtgtgccaggatatgaaccatgaatacatgtcctggtatcg
acaagacccaggcatggggctgaggctgattcattactcagttggtgctggtatc
actgaccaaggagaagtccccaatggctacaatgtctccagatcaaccacagagg
atctcccgctcaggctgctgtcggtgctccctcccagacatctgtgtacttctg
tgccagcaggccgggactagcgggagggcgaccagagcagtagtacttcgggcccgggc
accaggctcacggtcacagaggacctgaaaaacgtgttcccacccgaggctcgct[box]
[box]gttttgagccatcagaagcagagatctcccacacccaaaaggccacactggtgtg
cctggccacaggcttctaccccgaccacgtggagctgagctggtgggtgaatggg
aaggaggtgcacagtgggggtcagcacagacccgcagccccctcaaggagcagcccg
ccctcaatgactccagatacgctctgagcagccgcctgagggtctcgccacctt
ctggcaggacccccgcaaccacttccgctgtcaagtccagttctacgggctctcg
gagaatgacgagtggacccaggatagggccaaacccgtcaccagatcgtcagcg
ccgaggcctggggtagagcagactaa

Figure 52 Val 13→C β chain

M

N₁AGVTQTPKF QVLKTGQSMT LQCAQDMNHE YMSWYRQDPG MGLRLIHYSV
GAGITDQGEV PNGYNVSRST TEDFPLRLLS AAPSTSVYF CASRPGLAGG
RPEQYFGPGT RLTVTEDLKN VFPPEVACFE PSEAEISHTQ KATLVCLATG
FYPDHVELSW WVNGKEVHSG VSTDPOPLKE QPALNDSRYA LSSRLRVSAT
FWQDPRNHFR CQVQFYGLSE NDEWTQDRAK PVTQIVSAEA WGRAD*

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Figure 53a – Asp 59→C β chain

atgaacgctggtgtcactcagacccccaaaattccaggtcctgaagacaggacaga
gcatgacactgcagtggtgccaggatatgaaccatgaatacatgtcctggtatcg
acaagacccaggcatggggctgaggctgattcattactcagttggtgctggtatc
actgaccaaggagaagtccccaatggctacaatgtctccagatcaaccacagagg
atttcccgtcaggctgctgtcggctgctccctcccagacatctgtgtacttctg
tgccagcaggccgggactagcgggagggcgaccagagcagtagtacttcgggcccgggc
accaggctcacgggtcacagaggacctgaaaaacgtgttcccacccgagggtcgctg
tgtttgagccatcagaagcagagatctcccacacccaaaaggccacactggtgtg
cctggccacaggcttctaccccgaccacgtggagctgagctggtgggtgaatggg
aaggagggtgcacagtgggggtcagcaca[box]ccgcagcccctcaaggagcagcccg
ccctcaatgactccagatacgctctgagcagccgctgaggggtctcggccacctt
ctggcaggacccccgcaaccacttccgctgtcaagtccagttctacgggctctcg
gagaatgacgagtggacccaggatagggccaaacccgtcaccacagatcgtcagcg
ccgaggcctggggtagagcagactaa

Figure 53b Asp 59→C β chain

M

N₁AGVTQTPKF QVLKTGQSMT LQCAQDMNHE YMSWYRQDPG MGLRLIHYSV
GAGITDQGEV PNGYNVSRST TEDFPLRLLS AAPSTQSVYF CASRPGLAGG
RPEQYFGPGT RLTVTEDLKN VFPPEVAVFE PSEAEISHTQ KATLVCLATG
FYPDHVELSW WVNGKEVHSG VSTCPQPLKE QPALNDSRYA LSSRLRVSAT
FWQDPRNHFR CQVQFYGLSE NDEWTQDRAK PVTQIVSAEA WGRAD*

Figure 54a – Arg 79→C β chain

atgaacgctggtgtcactcagacccccaaaattccaggtcctgaagacaggacaga
gcatgacactgcagtggtgccaggatatgaaccatgaatacatgtcctggtatcg
acaagacccaggcatggggctgaggctgattcattactcagttggtgctggtatc
actgaccaaggagaagtccccaatggctacaatgtctccagatcaaccacagagg
atttcccgtcaggctgctgtcggctgctccctcccagacatctgtgtacttctg
tgccagcaggccgggactagcgggagggcgaccagagcagtagtacttcgggcccgggc
accaggctcacgggtcacagaggacctgaaaaacgtgttcccacccgagggtcgctg
tgtttgagccatcagaagcagagatctcccacacccaaaaggccacactggtgtg
cctggccacaggcttctaccccgaccacgtggagctgagctggtgggtgaatggg
aaggagggtgcacagtgggggtcagcacagacccgcagcccctcaaggagcagcccg
ccctcaatgactccagatacgctctgagcagc[box]ctgaggggtctcggccacctt
ctggcaggacccccgcaaccacttccgctgtcaagtccagttctacgggctctcg
gagaatgacgagtggacccaggatagggccaaacccgtcaccacagatcgtcagcg
ccgaggcctggggtagagcagactaa

Figure 54b Arg 79→C β chain

M

N₁AGVTQTPKF QVLKTGQSMT LQCAQDMNHE YMSWYRQDPG MGLRLIHYSV
GAGITDQGEV PNGYNVSRST TEDFPLRLLS AAPSTQSVYF CASRPGLAGG
RPEQYFGPGT RLTVTEDLKN VFPPEVAVFE PSEAEISHTQ KATLVCLATG
FYPDHVELSW WVNGKEVHSG VSTDPOPLKE QPALNDSRYA LSSCLRVSAT
FWQDPRNHFR CQVQFYGLSE NDEWTQDRAK PVTQIVSAEA WGRAD*

Figure 55a – Phe 14→C β chain

atgaacgctggtgtcactcagacccccaaaattccaggtcctgaagacaggacaga
gcatgacactgcagtgtgcccaggatatgaaccatgaatacatgtcctggtatcg
acaagacccaggcatggggctgaggctgattcattactcagttggtgctggtatc
actgaccaaggagaagtccccaatggctacaatgtctccagatcaaccacagagg
atttcccgtcaggctgctgtcggctgctccctcccagacatctgtgtacttctg
tgccagcaggccgggactagcgggagggcgaccagagcagtagtacttcgggcccgggc
accaggctcacgggtcacagaggacctgaaaaacgtgttcccacccgaggctcgctg
tggtgagccatcagaagcagagatctcccacacccaaaaggccacactggtgtg
cctggccacaggcttctaccccgaccacgtggagctgagctggtgggtgaatggg
aaggaggtgcacagtgggggtcagcacagacccgcagccccctcaaggagcagcccg
ccctcaatgactccagatacgctctgagcagccgcctgagggtctcggccacctt
ctggcaggacccccgcaaccacttccgctgtcaagtccagttctacgggctctcg
gagaatgacgagtggacccaggatagggccaaaccggtcaccacagatcgtcagcg
ccgaggcctggggtagagcagactaa

Figure 55b Phe 14→C β chain

M
N₁AGVTQTPKF QVLKTGQSMT LQCAQDMNHE YMSWYRQDPG MGLRLIHYSV
GAGITDQGEV PNGYNVSRST TEDFPLRLLS AAPQSOTSVYF CASRPGLAGG
RPEQYFGPGT RLTVTEDLKN VFPPEVAVCE PSEAEISHTQ KATLVCLATG
FYPDHVELSW WVNGKEVHSG VSTDPOPLKE QPALNDSRYA LSSRLRVSAT
FWQDPRNHFR CQVQFYGLSE NDEWTQDRAK PVTQIVSAEA WGRAD*

Figure 56a – Gly 55→C β chain

atgaacgctggtgtcactcagacccccaaaattccaggtcctgaagacaggacaga
gcatgacactgcagtgtgcccaggatatgaaccatgaatacatgtcctggtatcg
acaagacccaggcatggggctgaggctgattcattactcagttggtgctggtatc
actgaccaaggagaagtccccaatggctacaatgtctccagatcaaccacagagg
atttcccgtcaggctgctgtcggctgctccctcccagacatctgtgtacttctg
tgccagcaggccgggactagcgggagggcgaccagagcagtagtacttcgggcccgggc
accaggctcacgggtcacagaggacctgaaaaacgtgttcccacccgaggctcgctg
tggttgagccatcagaagcagagatctcccacacccaaaaggccacactggtgtg
cctggccacaggcttctaccccgaccacgtggagctgagctggtgggtgaatggg
aaggaggtgcacagtgcgtcagcacagacccgcagccccctcaaggagcagcccg
ccctcaatgactccagatacgctctgagcagccgcctgagggtctcggccacctt
ctggcaggacccccgcaaccacttccgctgtcaagtccagttctacgggctctcg
gagaatgacgagtggacccaggatagggccaaaccggtcaccacagatcgtcagcg
ccgaggcctggggtagagcagactaa

Figure 56b Gly 55→C β chain

M
N₁AGVTQTPKF QVLKTGQSMT LQCAQDMNHE YMSWYRQDPG MGLRLIHYSV
GAGITDQGEV PNGYNVSRST TEDFPLRLLS AAPQSOTSVYF CASRPGLAGG
RPEQYFGPGT RLTVTEDLKN VFPPEVAVFE PSEAEISHTQ KATLVCLATG
FYPDHVELSW WVNGKEVHSC VSTDPOPLKE QPALNDSRYA LSSRLRVSAT
FWQDPRNHFR CQVQFYGLSE NDEWTQDRAK PVTQIVSAEA WGRAD*